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ABSTRACT

The second phase of development of a comprehensive Master Plan for New Jersey Institute of Technology is detailed. As part of an established and continuing planning process involving all segments of the campus community, it reaffirms and further refines the institutional mission and priorities for the next decade. The plan is drawn in the context of known present conditions, anticipated future circumstances, and a swiftly changing environment. Operational challenges, near term objectives and things accomplished pursuant to the Phase I plan are part of this document. Chapters include: mission and priorities of the Institute: student population served: enrollment projections: plans for attracting and retaining students: plans for academic program development: research development: public service: institute resources: campus master plan: and the planning process. Appendices include information such as: the long range planning committee: historical student profile data: enrollment projections: projected numbers of freshmen: the planning process: and facilities concept plan. Numerous tables are included with statistical data on enrollment, undergraduates, faculty, and facility information. (LC)

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# MASTER PLAN
# PHASE II

MARCH 1981

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# MASTER PLAN
# PHASE II

## MARCH 1981

NEWARK, NEW JERSEY

SAUL K. FENSTER
PRESIDENT

MARCH 1, 1981

# INTRODUCTION

This document represents the second phase of development of a comprehensive Master Plan for New Jersey Institute of Technology. As part of an established and continuing planning process involving all segments of the campus community, it reaffirms and further refines the institutional mission and priorities for the next decade. The Plan is drawn in the context of known present conditions, anticipated future circumstances, and a swiftly changing environment. Operational challenges, near term objectives and things accomplished pursuant to the Phase I Plan are part of the document.

This document is the result of the unstinting efforts of many members of the Institute community. Those serving on the Long Range Planning Committee and its subcommittees are listed in Appendix A. My sincere thanks to the members of these committees as well as the many others who contributed to this effort.

Saul K. Fenster
President

NB: First drafts of this report were completed during the 1979-80 Academic Year. Data are included as of that time period. It is our intention to update this plan and all tables on an annual basis.

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# NEW JERSEY INSTITUTE OF TECHNOLOGY

## MASTER PLAN, PHASE II

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# CHAPTER I MISSION AND PRIORITIES OF THE INSTITUTE

## 1.1 MISSION STATEMENT

New Jersey Institute of Technology is a technological university with a threefold mission of instruction, research, and public service. The Institute uniquely focuses its mission on the technological enterprise in a complex and dynamic urban-industrial society.

The Institute's educational programs prepare students for professional careers in architecture, engineering, management, the sciences and technology. Research and scholarly activities reflect the diverse interests of faculty in architecture, engineering, the mathematical and physical sciences, computer and information sciences, the humanities, management, and the social sciences. As a technological university, the Institute places emphasis on applications-oriented research, particularly where technology and society interact. Public service activities apply the Institute's special expertise to the challenging problems of America's most urbanized state.

The Institute throughout its history has sought to serve New Jersey by providing opportunities for a professional education to a broad spectrum of students*. The Institute's student population ranges from the exceptionally well-prepared to the educationally disadvantaged; from the recent high school graduate to the mature adult; from the full-time student to the part-time employed student. To serve this diverse population, NJIT provides educational experiences ranging from technical education to doctoral research, with a major emphasis on undergraduate professional education founded on a broad base of the sciences and humanities.

Central to the Institute's mission is the ability to meet the ever-changing technological needs of society. Founded in 1881 to provide academic preparation for technicians in Newark's industry, the Institute has evolved into a diversified technological university. This evolution will continue within the established educational programs, as well as for future programs, to ensure the dynamic nature of the Institute's response to society's needs.

As an urban technological university, NJIT has a mission to provide specialized training, research, services, and technical assistance responsive to the needs of the area and the State. The Institute views itself as a technological resource to state agencies, to the technical professions, and to the City of Newark where the Institute has always been located. The significant physical and human resources centered at the Institute can, through its public service role, have a significant impact on the quality of life in Newark and the State of New Jersey.

Part of the higher education complex in Newark, the Institute is favorably situated to interact with secondary schools and the community college, as well as the universities. Close articulation with these institutions provides special opportunities for entry into the technical professions, as well as for consortial educational and research programs.

In striving for excellence in all its endeavors, the Institute seeks to maintain a creative faculty, modern teaching and research facilities, up-to-date laboratory equipment, and a campus enviroment attractive to the communities it serves. In this effort to excel, the Institute aggressively solicits State, federal, and private funding. As New Jersey's urban technological university, NJIT offers a unique blend of technological education, research, and public service. In fulfilling its mission, the Institute must continue to be responsive to the needs of the State's citizens and industry, while cognizant of available resources and population trends.

## 1.2 RATIONALE FOR MISSION STATEMENT

### NJIT: A Technological University

The New Jersey Institute of Technology has evolved into a technological university whose mission in instruction, research, and public service is of unique importance to the nation's most urbanized and industrialized state.

While no generally accepted definition of a "technological university" exists, one can infer from the many examples of such institutions in other states a definition entirely in consonance with the mission of NJIT as stated in the preceding chapter. The technological university has a more specific focus in its range of activities than does a comprehensive university. The emphasis is on applications of science with the underpinnings of mathematics, humanities and the physical and social sciences.

NJIT's construct as a technological university articulates its relationships with local and state governmental units on the one hand and, on the other hand, with other colleges and universities, particularly those comprising the Newark higher education complex.

During the past decade, the Institute has: diversified its instructional programs; developed an extensive graduate program at the masters, professional degree, and doctorate levels; expanded greatly its research efforts; and extended significantly its public service activities - all essential steps in its emergence as a technological university. A major focus has been on the application of science and technology to the analysis and solution of modern societal problems.

## Characteristics of the Institute

The mission of New Jersey Institute of Technology is critically woven into the fabric of this state and the technological base upon which the State's economy rests. The Institute's complement of characteristics including its programmatic mission, research, public service, geographic location, and history, define a unique institution within the array of publicly and privately supported institutions of higher learning in New Jersey. This designation is justified solely upon its program mix: engineering; engineering technology; architecture; computer science; applied science; management; 'Man and Technology'; as well as extensive and growing offerings in not-for-credit continuing professional education.

Programs are augmented by the interaction of members of the Institute community with a resultant interdisciplinary orientation. Positive relationships among and between the four public institutions of higher learning comprising Newark's college and university complex, further expand the Institute's capacity and potential.

The Institute, located in New Jersey's largest city, astride a State and regional transportation hub, is critically important in its own right and as a testing ground for State and Federal urban policies. Its strategic location enhances the ability of the Institute to make accessible its array of technologically oriented programs to those living within the city and its surrounding suburbs, as well as those living throughout the State and beyond.

The statewide character of the Institute is enhanced by the recent addition of a residence hall, part of a broader program in progress. The Institute's location also provides excellent opportunities for doctoral thesis work, research, urban public service and internships, and enhances as well the technical and industrial options presently available to undergraduates for cooperative education.

Thus the location of the Institute is inevitably related to and assists in the continuing process of mission identification, definition, and a refinement in the areas of instruction, research, and public service. As in the past, the Institute intends to continue to expand upon its reputation for innovative technologically oriented programs of high quality resting on a broad, firm foundation in the sciences and humanities.

## 1.3 INSTRUCTIONAL PROGRAM AREAS

### Instructional Programs

The Institute's instructional programs are comparable in scope and range to those of other technological universities which include offerings across a wide variety of disciplines. Degrees conferred by the Institute include the baccalaureate, masters and doctorate.

The New Jersey Institute of Technology offers undergraduate and graduate programs in Engineering, Engineering Technology, Architecture, Surveying, Applied Science (including Computer and Information Science), and programs in such areas as Management Sciences and Industrial Administration.

Engineering: The B.S. degree is available in five fields, all of which are accredited by the Engineers Accreditation Commission of The Accrediting Board for Engineering and Technology (ABET). A B.S. program in Surveying was offered for the first time in 1979-1980. The M.S. is awarded in seven programs, and the doctorate in four. Taken as a whole, engineering represents the largest segment of NJIT's enrollment. The Professional Degree of Engineer is offered in four areas: Chemical Engineer, Civil Engineer, Electrical Engineer, and Mechanical Engineer. The PhD in Management, offered by Rutgers University is a joint degree program with NJIT.

Engineering Technology: A professional field distinct from engineering, and separately accredited by the Technology Accreditation Commission of The Accrediting Board for Engineering and Technology, engineering technology is offered in five options. It is the Institute's third largest program, with enrollment exceeded only slightly by architecture.

Architecture: Architecture, after considerable study, was assigned to the Institute by the Board of Higher Education only a few years ago. Classes were first offered in 1973 and the program was accredited by the National Architectural Accrediting Board in 1979. The Institute provides the only publicly supported program within the State. Its dimensions are such as to support the foreseeable needs of the State.

Applied Science: The Institute has large and well-qualified faculties in chemistry, computer and information science, mathematics, and physics. Academic programs include the B.S. and M.S. in computer Science, the B.S. and M.S. in Engineering Science, the M.S. in Applied Mathematics, and the M.S. in Applied Science. NJIT recognizes the need to avoid duplicating the considerable strength in science of Rutgers NCAS; hence, the emphasis in instructional programs is on applications. Present offerings rely on Rutgers biology and geology courses, just as Rutgers relies on the Institute's courses in applied mathematics and computer science.

Management: Management has been traditionally a part of the Institute's instructional programs. The management option in Mechanical Engineering became, in 1960, the B.S. in Industrial Engineering. M.S. degrees in Management Engineering and Industrial Engineering are offered for engineering B.S. graduates, and the Master of Science for those whose careers are in, or moving toward, management in an engineering or scientifically oriented enterprise. In addition, the Institute participates in Rutgers' Masters of Public Administration and jointly operates a Ph.D. program in management.

Humanities and Social Sciences: Given the social and political implications of technological development, the social sciences are of growing importance within the Institute's instructional programs. Indeed, the social sciences and humanities are as important to architecture and engineering as are the physical sciences. The B.S. degree in 'Man and Technology' examines the interaction of technology and society with special emphasis on the sciences and the humanities. In addition to the B.S. degree in 'Man and Technology', the Institute plans to maintain strong course offerings in the humanities and the social sciences that are directly oriented toward and consistent with the Institute's mission. These specially designed courses, coupled with the availability of a wide range of electives at Rutgers NCAS, gives the Institute's students access to a full spectrum of courses in the humanities and the social sciences.

Industrial Administration: The Bachelor of Science in Industrial Administration program applies modern management principles to the administration of industrial and technological organizations. Students select areas such as industrial relations, financial administration, and information management. The program serves as an entry to a broad range of management positions in business and government.

Certificate Programs: The Certificate Programs reflect the Institute's earliest traditions in the education of technicians. These part-time evening programs extend over three years and are equivalent to 1-1/2 years of full-time study. Options are offered in architectural, construction, electrical, mechanical, and plastics technology.

Pre-College Programs and Continuing Professional Education: In fulfilling its role as a technological university, NJIT offers technically-oriented pre-college programs for high-school students and, at the other end of the educational spectrum, seminars and courses for professionals, sponsored by its Division of Continuing Education. Pre-College Programs serve to broaden the horizons of primary and secondary school students to include the technological professions at a time when they are still developing their educational plans.

Graduate programs at the masters level will continue to be offered to provide professional preparation beyond the baccalaureate, and combined bachelors and masters programs will continue to be explored as alternatives for a segment of the student population. In order to fulfill an important mission element directed toward the expansion of knowledge, to help meet the needs of academic, corporate, and governmental sectors, to assist in the maintenancce of high quality academic programs at all levels, and to attract excellent faculty and students, the Institute will continue to offer graduate curricula through the doctorate and encourage a stimulating and growing program of research.

Consistent with its technological mission, NJIT will continue in its development of new programs of instruction and research and will, concomitantly, pursue an active schedule of re-evaluation of established programs. In a technological environment characterized by dramatic change and continuing expansion, ongoing review of all aspects of programming is an imperative to assure currency. Departments of instruction and research will be given particular encouragement to develop new programs and extensions of current programs, within the mission of the Institute, including liberal technological studies.

The Institute will continue to cooperate with other institutions in the development of articulation to improve access to a wide array of curricular offerings. The cooperative education program will be centralized and expanded.

NJIT will maintain its leadership role in making its programs attractive, available and effective for ethnic minorities, women, the physically handicapped and other under-represented segments of our society. For those students requiring them, an appropriate complement of educational and financial supportive services will be maintained and improved upon.

The Institute will continue to develop its part-time degree programs, certificate programs, and its program of continuing professional education for a widening variety of student publics. The Institute will seek to make its programs available at such times and locations as provide maximum benefit to the populations it seeks to serve and in this regard will be open to the possibility of interinstitutional arrangements.

The Institute regards the close geographic proximity of the four publicly supported institutions of higher learning in Newark as providing exemplary opportunities for cooperation, and is dedicated to continuing and expanding upon the many opportunities in instruction, research, public service, and other areas of endeavor.

## 1.4 LISTING OF DEGREE PROGRAMS

The degree programs currently offered by NJIT are listed in the table on the following page. This list includes the new Bachelor of Science in Surveying program offered for the first time in the 1979-80 academic year. Enrollments in each of these programs over the 6-year period 1974-1979 are tabulated in Chapter II and Appendix D, together with the numbers of degrees awarded.

In addition, the Institute's Division of Technology offers credit bearing certificate programs and individual courses to part-time evening students*, and the Continuing Education Division offers non-credit seminars and courses to a growing number of registrants each year.

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* NJIT does not offer the Associate Degree.

## SUMMARY LIST OF NJIT PROGRAM OFFERINGS

### UNDERGRADUATE PROGRAMS

Bachelor of Architecture

Bachelor of Science
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Industrial Engineering
- Mechanical Engineering
- Computer Science
- Engineering Science
- Engineering Technology
- Industrial Administration
- Man and Technology
- Surveying

### GRADUATE PROGRAMS*

Master of Science**
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Management Engineering
- Computer Science
- Applied Science (for secondary school teachers)
- Applied Mathematics
- Engineering Science

Degree of Engineer
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering

Doctor of Engineering Science
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering

### CERTIFICATE PROGRAMS

- Architecture Technology
- Construction Technology
- Electrical Technology
- Mechanical Technology
- Plastics Technology

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*NJIT offers, jointly with Rutgers Graduate School and Rutgers Graduate School of Business Administration, a doctoral program in management with a degree option in the area of computer and information systems management.

**The Master of Science degree can also be obtained by completing programs of interdisciplinary studies. For example, the Departments of Organizational and Social Sciences, and Industrial and Management Engineering jointly offer an option in Management of Human Resources.

## 1.4 DIRECTIONS AND GOALS FOR THE NEXT DECADE

In its Phase I Master Plan of June 1978, the Institute set forth its educational directions in twenty "planning principles", including more than fifty goals and objectives to guide the Institute's continuing growth as a technological university. The planning principles outline educational directions and are philosophical in character, but the majority of the goals are operational and point to specific actions directed toward the achievement of the broader objectives.

A brief summary of the Institute's Educational Directions and Goals for the next decade is presented briefly in the sections which follow.

### Educational Directions

The Institute is committed to the offering of broadly based programs directed toward the achievement of professional competence. The concept of professional competence embraces within it the ability for critical analysis and the development of high ethical standards and values. The Institute will continue to emphasize not only its professionally directed studies but will stress as well mathematics, physical sciences, social and organizational sciences, and humanities, which are critically necessary as foundation and integrating elements within a broadly based education.

The baccalaureate will continue to be offered as the first professional degree. This is consistent with the current and projected needs of NJIT's student population and consistent as well with the projected demand for individuals educated in the technological and related professions.

The goals described briefly below relate to the strengthening of institutional capabilities in order that the responsibilities inherent in the mission of NJIT be discharged with maximal effectiveness. During the 1980's the transition to institutional comprehensiveness within the technological mission should be firmly established. Building upon an existing base of quality, The Institute should develop Statewide and national visibility as the technological university of the State of New Jersey.

## Goals for the Next Decade

1. In order to maintain and ensure the excellence of its academic programs, the Institute will strengthen its programmatic and departmental review procedures. Embraced within considerations of quality are: faculty development, modernization of laboratories and other instructional facilities; maintenancce of an up-to-date library including non-print media, and other supportive materials; and the introduction, where appropriate, of new instructional methodology. This comprehensive goal carries with it necessary examination of educational outcomes as gauged by such factors as the professional characteristics of Institute graduates, and the most effective utilization of resources toward that end.

2. The Institute will develop a more integrated approach for providing academic advisement, personal and career counselling, skills development and related services in order to improve student retention rates and to better respond to the needs of a more diversified student population. Those services necessary to enhance learning effectiveness and improve the quality of campus life will be reviewed in order to ensure optimum organizational configuration and effective resource utilization. Included in this review will be the range of social, athletic, and cultural opportunities available, as well as advisement and counseling services.

3. The Institute will extend its geographic outreach and more fully realize its statewide mission by providing residential housing for up to twenty per cent of its full-time student body. Toward the same end, the Institute will offer appropriate courses and programs at community colleges and in articulation with community colleges, and at other off-campus locations where needed. Extended outreach will apply also in expanded pre-college and admissions activities.

4. There will be continuing expansion in the scope and magnitude of the research effort of the Institute related to the theoretical and applied aspects of each discipline represented within the Institute and in a variety of interdisciplinary activities. Given the special responsibilities of the Institute, particular emphasis will continue to be given such areas of societal concern as environmental protection, energy conservation and generation, transportation, urban planning and support systems, health services, and industrial productivity. In seeking research funding, first consideration will be given to educational and societal needs and objectives. Related importantly to this goal is not only expanded support for specific research projects through government and corporate contracts and grants, but an increased base of support from alumni, and, through the Foundation at NJIT, the corporate sector and the philanthropic community.

5. The Institute will complete, and implement as resources may permit, a comprehensive campus facilities master plan to meet a diversity of needs and challenges of the next decade and beyond. This planning process will involve the various instructional, research and service units of the Institute whose needs are to be addressed and will demonstrate sensitivity to the concerns of the community as well. Among the requirements to be addressed are the upgrading and reallocation of existing building space, the leasing and construction of additional instructional and research space, student housing, and the acquisition of land for parking, recreation, and major structures. Important within the overall planning effort will be considerations of deferred and preventative maintenance, setting of priorities,

removal of barriers to the handicapped, and the most energy effective use of physical plant.

6. The Institute will develop a more comprehensive approach to employee relations, integrating more effectively the objectives of affirmative action, employee career development, collective bargaining related functions, and the entire array of personnel related policies and practices.

7. The Institute will build upon its existing base of public service activities, particularly as they relate to the urban environment, with specific focus upon, but not necessarily limited to, the City of Newark. It is a specific goal of the Institute to significantly enhance its urban research and public service activities and to be responsive to local and State governments in assisting them to improve the quality of urban life.

8. There will be essential completion of appropriate systems design and implementation, and policy review and codification, necessary for effective decision making and resource allocation. This goal embraces within it an improved and integrated operating management information system and personnel information system, and computerized processes and systems related to student files, registration, financial aid, and bursarial services. Initial steps toward the acquisition of an appropriate student information system began in 1981 with a planned completion for fall 1982.

9. The Institute will improve its current procedures and systems related to budgeting and resource allocation, assuring appropriate flexibiity to meet the many responsibilities of the faculty and to provide incentives which may lead to enhanced effectiveness.

10. A thorough examination of Institute governance will be undertaken with the objective of clarifying roles, relationships, and procedures. An approach to departmental governance will be developed that will more effectively involve the faculty in goal setting, developing strategies, and evaluating results. Institute procedures and standards related to promotion and tenure will be examined as they relate to department and Institute activity. An overall objective of this goal is to encourage closer working

relationships among faculty, administration, and staff in considering issues of mutual concern.

11. The building of a maximally effective public affairs and publications function will be essentially completed in order to promote the most positive communication with the many internal and external constituencies.

Status Report on Implementation of the Master Plan, Phase I

In the three years since the directions set forth above were enunciated in the NJIT Master Plan, Phase I, considerable progress has been made toward their realization. Many specific goals, omitted for the sake of brevity in the preceding summary, have been met; progress toward meeting others has been substantial. The latter and other activities still in the planning stages, will be discussed in the remaining chapters of this document, as will additional goals set down since June, 1978.

Described briefly below are those goals which have been realized, or which are well on the way to a clearly viewed completion, or concerning which important milestones have been reached.

1. A process of periodic program review including the use of outside peer reviews has been designed and adopted, and two alternative strategies are being implemented on an experimental basis during the current academic year in four program areas.

2. Through its participation in the various task forces of the Statewide master planning effort and a document entitled NJIT, Programmatic Overview (May, 1979), the Institute has clarified its mission. A broader statewide charge within the technological professions is assigned in the second draft of the statewide plan for Higher Education. At the same time, Institute personnel have continued to recommend alternative funding bases for the Institute, reflecting this unique mission to the Department of Higher Education.

3. Concerning program revisions, the following activities have taken place:

(a) Eight interdisciplinary concentrations ranging from Urban Studies through Technology assessment have been organized within the 'Man and Technology' undergraduate curriculum.

(b) The B.S. in Surveying program is currently offered by the Institute.

(c) Planning for the Masters in Architecture program has been completed.

(d) NJIT is soon to enter into a closer articulation with Essex County College involving two programs in Engineering Technology, going beyond basic credit transfer arrangements. In addition, off-campus courses are offered at Mercer County College and Camden Community College, with other sites under consideration.

(e) The Institute is offering portions of its graduate Computer Science program at the RCA Moorestown facility.

(f) The Division of Continuing Education has been reorganized and its offerings have expanded to double the number of course registrations during the past year.

4. A formal deferred maintenance inventory has been completed as have elements of a preventative maintenance program.

5. Planning is well under way to make the campus more accessible to the physically handicapped. Major construction involving ramps, new doorways and modified rest rooms was accomplished during the summer of 1980.

6. The Institute's first student residence hall was completed on schedule, despite difficult-to-meet schedules from the time of original grant request to completion of construction. The 210 bed facility is fully occupied with a sizeable waiting list. The concept for a second residence has been approved by NJIT Trustees and the State Board of Higher Education. Architectural planning is in progress. In the meantime, arrangements have been undertaken to lease seventy rooms at the Newark YM-YWCA and these rooms have been filled.

7. A Phase I Facilities Master Plan has been completed. Within a comprehensive conceptual framework, this report* seeks to address the needs of the Institute in the decades ahead in the areas of instruction, research, recreation, and parking, and examines a variety of issues related to the larger community. The Phase II Facilities Plan was completed in January 1981.

8. A retention study of undergraduates has been organized with the objective of coordinating all applicable phases of student services and academic advisement in the task of improving the learning environment and retention of a more diversified student body.

9. Significant steps have been taken toward the development of an improved public relations profile for the Institute. Most Institute recruiting publications have been redesigned, a new Institute logo and new Institute publication standards have been adopted, a Centennial celebration plan is being implemented, and an Institute advertising program is under way.

10. There has been a marked increase in research and public service activities, encouraged in large measure through the Institute's research centers: Computer Conferencing, Technology Assessment, Law and Technology, and Air Monitoring. As part of the Centennial Celebration, a faculty research and public service directory is being prepared during 1980-81.

11. The Board of Trustees has approved a Career Development Policy statement presenting an overall rationale together with a coordination and codification of Institute policies and regulations. Included is a comprehensive career development program which provides a plan of tuition assistance for all permanent full-time employees and permanent part-time employees working at least 20 hours per week.

12. The library is soon to expand its computer-based cataloging effort to include bibliographic search capability.

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*Facilities Master Plan, Phase I; Concepts, Opportunities, Constraints, David Gibson and Richard Hatch, January 21, 1980.

13. A new and expanded computer center was formally opened in October 1980 and the Institute's new Univac 90/80-3 computer is fully operational. This facility is designed to serve as the northern node of the New Jersey Educational Computer Network.

14. The Center for Pre-College Programs has beeen organized and formally approved by the Board of Trustees and Board of Overseers. The Center represents an effort to unify a variety of ongoing Institute programs directed toward area high school populations and high school curriculum improvement, and will serve as a nucleus for further developmental activity in this direction.

15. Several program documents and proposals for modification of the formula by which State funding for the Institute is determined were submitted to the Department of Higher Education. Discussions with appropriate State officials continue and it is hoped that, as a result, the basis for funding of the Institute will better reflect the realities of today rather than those of a decade ago.

16. Significant progress has been made in the area of inter-institutional cooperation involving the four public institutions of higher education in Newark. This has manifested itself in the development of planned joint degree programs and close program articulation where appropriate. Ongoing discussions between administrative and faculty counterparts resulted in co-sponsorship of a week-long 'Mind, Child, Architecture' seminar and workshop program, and a variety of other academic and administrative formal and informal relationships.

17. Within the overall Institute Master Planning effort, each academic department has developed the first phase of a master plan for its future direction and development.

18. The ground floor of a 45,000 square feet rehabilitated building on Bleeker Street has been occupied by the Department of Mechanical Engineering, thus completing phase I of its relocation. Remodeling of the upper two floors had been projected to be completed with funds derived from the Centennial Capital Fund Drive initiated by the Institute in 1980. Efforts to secure State and private funding will proceed toward completion of this project. Preliminary architectural and engineering drawings have been prepared in cooperation with Department faculty.

19. An athletic policies review council was organized to review existing policies and practices with the objective of providing compliance oversight, reviewing athletic budgets, and developing recommendations for athletic policies.

20. Property acquisitions made possible by alumni giving continues pursuant to a property acquisition plan of several years' duration. A number of important acquisitions were made this past year and several more are in the negotiations stage.

21. A plan for administrative reorganization has been completed and is partly implemented.

22. Budget processes have been improved and involvement in the process of budget design has been broadened.

## Additional Goals

In the planning process of the past two years the Institute's Long Range Planning Committee has identified several additional goals and has consolidated and restated some of the goals listed above, making them more specific.

1. The Institute will give serious consideration to the offering at county colleges of programs within its mission, with programatic integrity the major criterion. Courses necessary to supplement offerings by the host college will be given to provide county college students with viable articulation programs in these areas.

2. The Institute Housing Committee, working with the architectural planner, has set a goal of approximately 375 additional housing units contiguous with the recently completed dormitory, to be operational within the next four years.

3. The enrollment goals articulated in the Statewide Plan for Higher Education, First Draft (see Chapter III and Appendix E herein) should be regarded as a goal achieveable through a combination of objectives in outreach, new academic programs and improved retention as set forth in Chapter III.

4. Completion of a program to provide access for the physically handicapped to all NJIT buildings except the historical landmark administration building (Eberhardt Hall), in compliance with the regulations of section 504 of the 1973 Rehabilitation Act, is a goal for 1980 - 1981.

5. A comprehensive retention program has been proposed (Chapter IV), which, implemented in stages over a three-year period, will coordinate the efforts of faculty, administrators and students through a formal structure to be directed by an appropriate administrator.

6. A formal period of final examinations, absent from the Institute calendar since the foreshortened semesters during World War II, has been approved by the faculty and is being implemented during the 1980-1981 academic year.

7. To further enhance faculty development and to encourage maintenance of up-to-date teaching methods, a special effort will be made to involve faculty in the planning and evaluating of the activities of the library and media center. This will serve two ends. First, it will assure that the library and media center remain aware of the services that are needed to support scholarly research and teaching. Second, it will encourage faculty development by maintaining a regular conduit for informing the faculty of new resources and services as they become available.

8. During the 1979-1980 Academic Year, a subcommittee of the Long Range Planning Committee devoted its efforts to planning a more coordinated approach to public service activities. One result of that effort is a consolidation of goals numbered 4 and 7 in the preceding section.

The Institute is committed to expanding its activities in the field of public service. This effort reflects a major element within the threefold mission of a technological university. To the extent that resources permit, such service should be made available to a broad public including individual citizens, business and industry, and professional societies as well as Federal, State and local agencies. The Institute will focus its efforts in areas where it can render effective service.

Finally, a number of these goals will be the special focus of the self-study effort undertaken by the Institute during 1981 as preparation for a Middle States visit in March of 1982. In view of extensive master planning efforts already in progress, the Middle States Association has agreed to the "selected topics" approach to the self-study. The Institute Self-Study Steering Committee has designed a study that will utilize four task forces to examine the following areas: Institutional Accountability and Program Review, The Role of Extension Programs, Human Resource Development, and the Community Service Mission of The University. Task Forces began meeting in February of 1981 and will report before the end of the calendar year.

# CHAPTER II STUDENT POPULATION TO BE SERVED

## 2.1 FRESHMAN PROFILE

Like other institutions of higher education in the United States, NJIT has experienced dramatic change in many areas during its first 100 years. Initially concerned only with meeting the industrial needs of the city, the Institute now serves the interests of the suburban and rural areas of the State as well, while a primary orientation continues to be related to the urban environment and the needs of the City of Newark.

Although the Institute has expanded its curriculum offerings from Engineering to include Computer Science, Architecture, Industrial Administration, Engineering Technology, and 'Man and Technology', probably the most important and dramatic changes have been experienced in the student population. During the past decade NJIT has acquired an important leadership role in instructing those students who have often been neglected in technological education. In particular, the Institute has attracted national interest in the outstanding success of its Educational Opportunity Program for educationally and economically disadvantaged students, with strong emphasis upon minority students.

Although women have traditionally selected careers other than engineering or architecture, the Institute has maintained a policy of coeducation from its very beginning. In 1930, the first woman in this nation to achieve a B.S. in Chemical Engineering graduated from the Institute (then NCE), and each year more and more women select NJIT to pursue a professional career in Engineering and Architecture. Presently approximately 10 per cent of the students are women.

Despite a national trend toward lower SAT scores, the 1979 freshman class profile showed a combined increase in verbal and mathematics SAT scores of some

34 points. Within the engineering program, sixty per cent of the entering class scored better than 550 in mathematics compared with some 53 percent a year ago. High school class rank also showed good improvement.

Appendix B includes outcomes of the N.J. Basic Skills Test for 1979 freshmen, and a comparison with results for the 1978 class and also with the overall N.J. results for 1979. These results show that NJIT students outperformed the average New Jersey student on all parts of the test. The differences are most dramatic in the mathematics area, but it must be realized that the average student taking the test did not take as much high school mathematics (e.g., algebra) as is required for entrance to NJIT. Also, despite the high average scores, fifty per cent of the freshmen needed remedial work in at least one of the tested areas.

Aside from architecture, all academic programs are offered on a part-time basis for the evening student. This may be considered unique because NJIT is the only institution of higher education within this State that offers evening programs in a full range of engineering disciplines.

All of the factors mentioned above have had their effect on the profile of freshmen at NJIT. Statistics from 1974 through the fall class of 1979 on selectivity and yield, place of residence and high-school background, SAT scores and rank in class, age distribution, basic skills test score distribution, and ethnic origin, are tabulated in Appendix B.

Freshmen admissions patterns show a 45 per cent increase in applications over the period 1974-1979. Freshman enrollments fluctuate between 626 and 752, averaging 670. There was no greater increase because student quality was improved through a gradual change of 13 per cent in selectivity. There was also a gradual drop of 11 per cent in yield over the years 1974 to 1977.

Since 1977, yield has been a nearly constant 54 per cent.

The Institute's attempt to enroll the disadvantaged and minorities is partially documented by the increase in EOP enrollments of 26 per cent to a current total of 12.3 per cent of first-time full-time freshmen. The overall enrollment of women increased by 31% in the past two years at the Institute.

## FRESHMAN ADMISSIONS PATTERN
## ADMISSIONS TO ALL PROGRAMS

| REGULAR FRESHMAN | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
| Applied | 1266 | 1549 | 1534 | 1580 | 1585 | 1831 | 1803 |
| Accepted | 910 | 1086 | 909 | 1056 | 1101 | 1090 | 1039 |
| Enrolled | 594 | 684 | 549 | 574 | 608 | 580 | 585 |
| Selectivity[1] | 72 | 70 | 59 | 67 | 69 | 59 | 58 |
| Yield[2] | 65 | 63 | 60 | 54 | 55 | 53 | 56 |
| EDUCATIONAL OPPORTUNITY PROGRAM | | | | | | | |
| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
| Applied | ---[3] | ---[3] | ---[3] | 157 | 158 | 124 | 201 |
| Accepted | 93 | 100 | 98 | 108 | 116 | 109 | 140 |
| Enrolled | 65 | 68 | 77 | 77 | 80 | 81 | 87 |
| TOTAL FRESHMAN | 659 | 752 | 626 | 651 | 688 | 661 | 672 |

[1] Selectivity = 100 (Accepted/Applied)

[2] Yield = 100 (Enrolled/Accepted)

[3] Data not available

## 2.2 PROFILE OF STUDENT BODY

### Enrollment Patterns

The degree programs currently offered by NJIT are listed on page 1-11. This list includes the new Bachelor of Science in Surveying program offered for the first time in the 1979-1980 academic year. Enrollments in each of these programs over the 5-year period 1975-1979 are tabulated on the following two pages. Totals are plotted on the graphs which follow. Additional tables showing breakdown by division and by academic degree granting department are included in Appendix D. As noted on the graph sheet undergraduates were classified as "day" or "evening" students through 1977. Since that time the students have been categorized as "full-time" (12 or more credits) or "part-time". As a result of this change, the data indicate a decrease in undergraduate day/full-time students from 1977 to 1978 which is not a decrease in actual numbers of students.

In addition to credit bearing certificate programs the Institute's Division of Technology offers individual courses to part-time evening students*, and the Continuing Education Division offers non-credit seminars and courses to a growing number of registrants each year. Data on numbers of registrants in these divisions are included in Appendix D.

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*Division of Technology students often obtain associate degrees from community colleges. NJIT does not offer such degrees, nor does it intend to.

## ENROLLMENT DISTRIBUTION BY PROGRAM
## FALL HEADCOUNT*

| | | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| | UNDERGRADUATE[5] | | | | | |
| 1 | Engineering[1] | | | | | |
| | Full-Time | 2057 | 2039 | 2158 | 2004 | 2095 |
| | Part-Time | 574 | 541 | 528 | 643 | 702 |
| 2 | Engineering Technology | | | | | |
| | Full-Time | 204 | 229 | 164 | 187 | 161 |
| | Part-Time | 225 | 252 | 271 | 288 | 329[6] |
| 3 | Architecture | | | | | |
| | Full-Time | 363 | 389 | 386 | 351 | 380 |
| | Part-Time | --- | --- | --- | 29 | 30 |
| 4 | Industrial Administration | | | | | |
| | Full-Time | 112 | 126 | 134 | 111 | 127 |
| | Part-Time | 25 | 26 | 34 | 53 | 41 |
| 5 | Computer Science | | | | | |
| | Full-Time | 126 | 126 | 162 | 171 | 237 |
| | Part-Time | 35 | 32 | 50 | 73 | 89 |
| 6 | Man and Technology | | | | | |
| | Full-Time | 33 | 35 | 40 | 55 | 37 |
| | Part-Time | 3 | 5 | 3 | 3 | 10 |
| 7 | Non-matriculated[9] | | | | | |
| | Full-Time | 67 | 158 | 73 | 40 | 33 |
| | Part-Time | 90 | 91 | 76 | 186 | 280 |
| 8 | Division of Technology | | | | | |
| | Part-Time | 618 | 623 | 641 | 562 | 549 |
| | SUBTOTALS, UNDERGRADUATE | | | | | |
| | Full-Time | 2962 | 3102 | 3117 | 2919 | 3070 |
| | Part-Time | 1570 | 1570 | 1603 | 1837 | 2030 |
| | TOTAL, UNDERGRADUATE | 4532 | 4572 | 4720 | 4756 | 5100 |

*For superscripts, see next page.

(Continued)

## ENROLLMENT DISTRIBUTION BY PROGRAM -Cont'd.

| | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|
| GRADUATE[10] | | | | | |
| 1 Masters, Engineering | | | | | |
| Full-Time | 128 | 99 | 85 | 65 | 63 |
| Part-Time | 611 | 554 | 542 | 490 | 539 |
| 2 Masters, Non-Engineering | | | | | |
| Full-Time | 23 | 25 | 32 | 20 | 22 |
| Part-Time | 194 | 188 | 174 | 139 | 224 |
| 3 Programs Beyond M.S.[2] | | | | | |
| Full-Time[3] | 17 | 21 | 16 | 16 | 19 |
| Part-Time | 46 | 48 | 41 | 38 | 19 |
| 4 Graduate, Other[4] | | | | | |
| Part-Time | 88 | 128 | 133 | 150 | 154 |
| SUBTOTAL, GRADUATE | 1107 | 1063 | 1023 | 918 | 1040 |
| TOTAL ENROLLMENT | 5639 | 5635 | 5743 | 5674 | 6140 |

[1] Includes Engineering Science

[2] Includes Doctorate and Degree of Engineer

[3] Full-Time Doctoral students

[4] Includes Rutgers, Special, and Non-Matriculated graduate students

[5] Prior to 1978, "Full-Time" and "Part-Time" are reported as "Day" and "Evening", respectively.

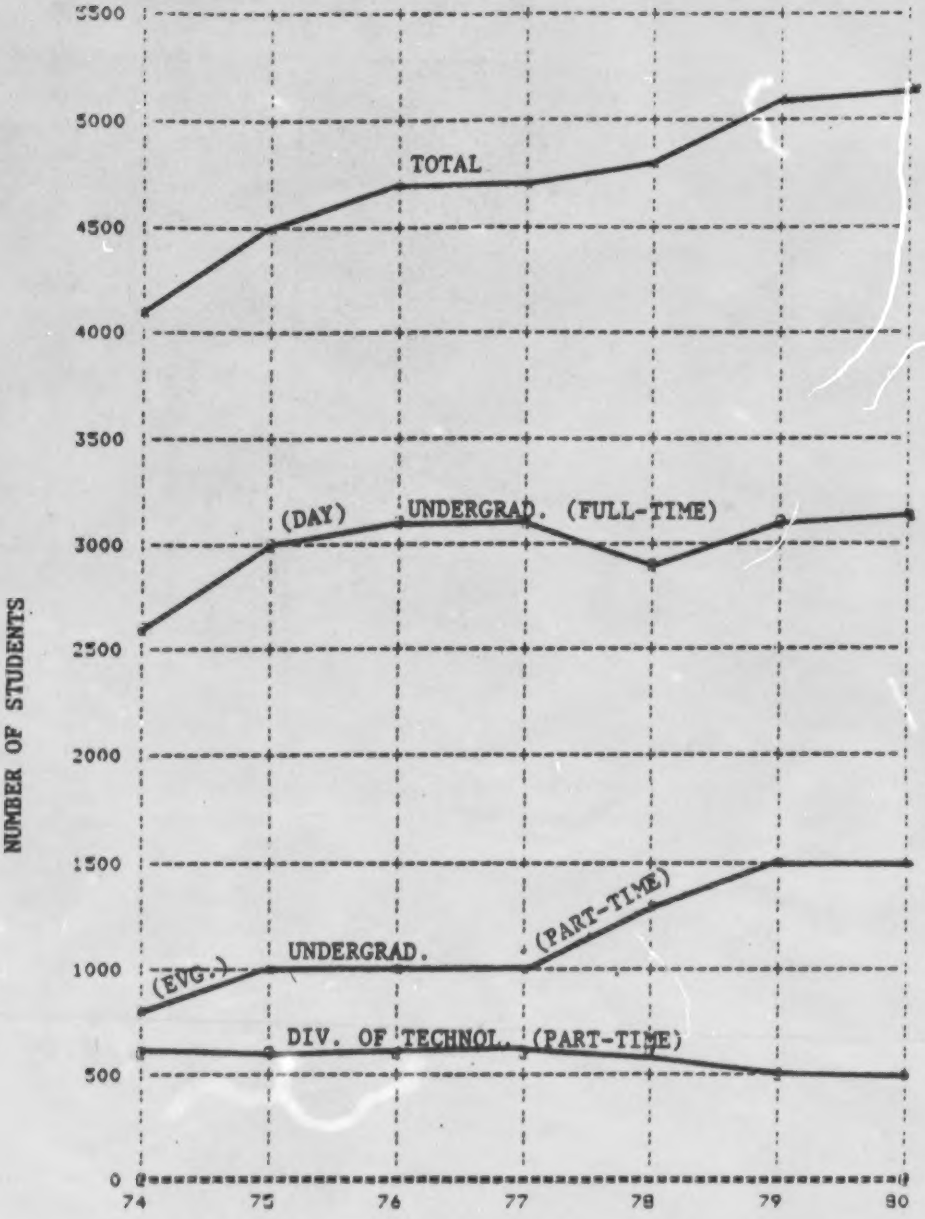
[6] Includes 15 students at Mercer County Community College

[7] Prior to 1978 registrants listing no major field of study are included in the non-matriculated category.

[8] Full-time graduate students as counted in this tabulation are working full-time at the Institute, with no external employment, and generally registered for 6 or more credits.

UNDERGRADUATE ENROLLMENTS 1974-1980

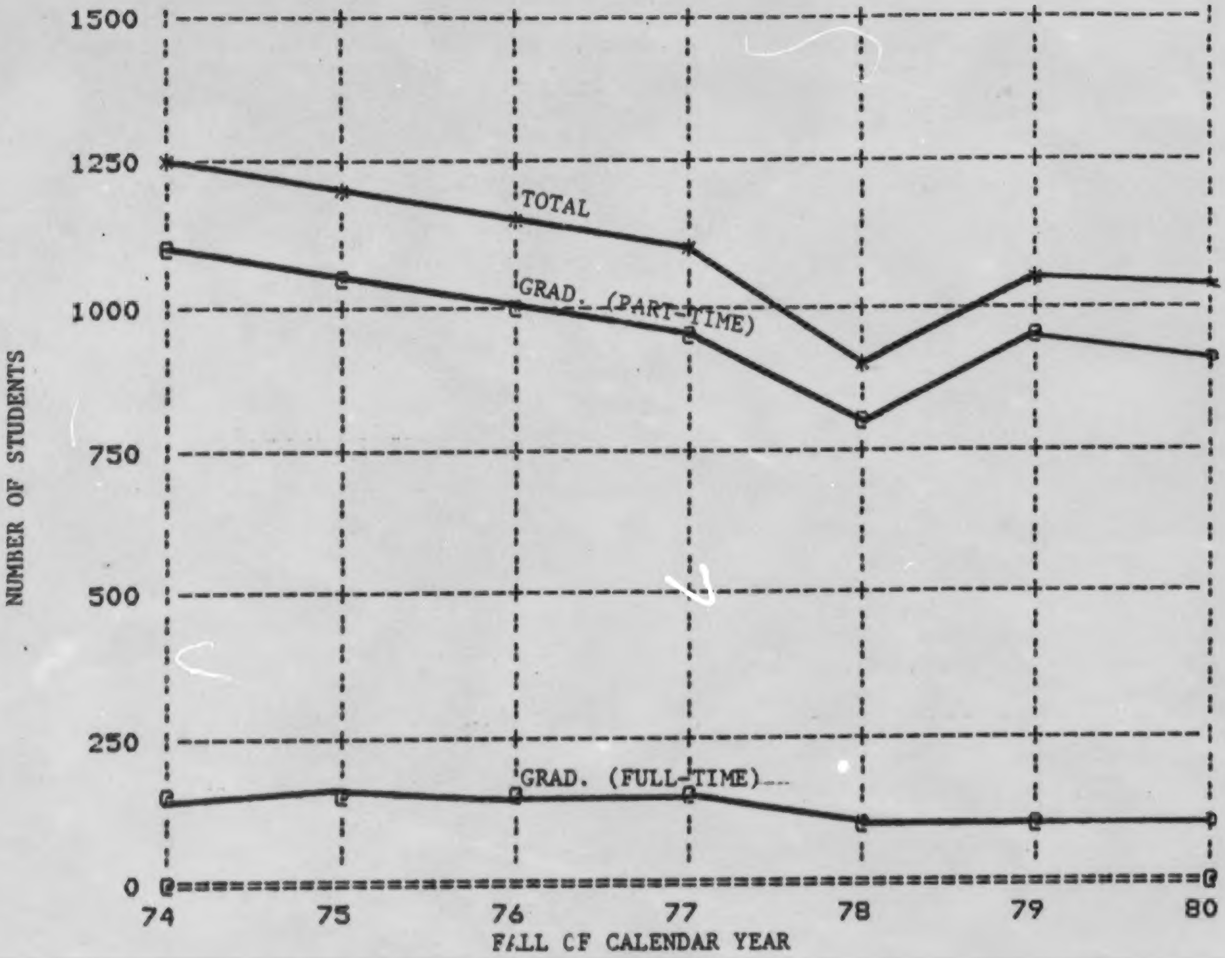
FALL HEADCOUNT



Note: Undergraduate enrollments were categorized as Day/Evening for 1974-1977 and Full-Time/Part-Time for 1978-1979.

## GRADUATE ENROLLMENTS 1974-1980

FALL HEADCOUNT



It may be noted from the table of enrollment distribution by program that undergraduates constitute approximately 83 per cent of the 1979 NJIT student body, the remaining 17 per cent being graduate students. Overall, 52 per cent are part-time students and 48 per cent full-time, although these percentages vary from one program to another.

The majority of the full-time students commute to NJIT from their home and part-time students commute from their work location to NJIT to their home, and in both groups most commutes occur in the seven-county suburban area around Newark -- Essex, Bergen, Union, Passaic, Hudson, Morris, and Middlesex counties. Commuting is done principally by automobile, with a substantial amount of car-pooling, despite the network of public transportation which, especially for the part-time student, is ineffective or at least inconvenient, especially for areas North of Newark such as Bergen County.

The ethnic and sex analysis for all divisions is given in the table on the following page. Each year shows increases in ethnic minority students and women. Compared with the fall of 1978 the growth has been as follows:

| | Black | Asian | Hispanic | Female |
|---|---|---|---|---|
| Increase, 1978-1979 | 13% | 24% | 34% | 27% |

The complete historical record from 1977 to date is included on the following page. Prior to 1977 the ethnic data are less reliable; however, percentage comparisons given in Appendix C for 1972, 1976, and 1979 are farily indicative of the progress NJIT has made in attracting ethnic minorities and women to technological professions.

Because the two largest student groups are young full-time undergraduates and older part-time graduate students, age distribution is meaningful only when expressed in terms of specific groups. However, overall, the largest age cohort is 18-20 years, with almost an equal number of age 21-24, and somewhat fewer in age bracket 25-34.

# ETHNIC AND SEX ANALYSIS
# UNDERGRADUATE AND GRADUATE DIVISION
# FALL ENROLLMENT DATA

| | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|
| Full-Time Undergraduate | | | | |
| Black | 146 | 154 | 186 | 209 |
| Hispanic | 132 | 141 | 170 | 184 |
| Asian | 51 | 79 | 106 | 146 |
| Male | 2727 | 2690 | 2771 | 2848 |
| Female | 216 | 229 | 298 | 332 |
| Total Surveyed | 3003 | 2919 | 3069 | 3180 |
| Part-time Undergraduate | | | | |
| Black | 22 | 78 | 88 | 111 |
| Hispanic | 17 | 44 | 67 | 76 |
| Asian | 8 | 36 | 20 | 43 |
| Male | 1662 | 1172 | 1347 | 1345 |
| Female | 87 | 103 | 115 | 133 |
| Total Surveyed | 1749 | 1275 | 1462 | 1478 |
| Full-Time Graduate * | | | | |
| Black | - | 6 | 4 | 4 |
| Hispanic | - | 2 | 6 | 8 |
| Asian | - | 6 | 10 | 16 |
| Male | 117 | 95 | 89 | 116 |
| Female | 20 | 12 | 13 | 8 |
| Total Surveyed | 137 | 107 | 102 | 124 |
| Part-Time Graduate | | | | |
| Black | 10 | 37 | 34 | 46 |
| Hispanic | 2 | 17 | 30 | 28 |
| Asian | 8 | 59 | 88 | 101 |
| Male | 858 | 724 | 829 | 789 |
| Female | 77 | 85 | 99 | 111 |
| Total Surveyed | 935 | 809 | 928 | 900 |
| Division of Technology | | | | |
| Male | | | 526 | 493 |
| Female | | | 19 | 26 |
| Total Surveyed | | | 545 | 519 |

*Student registered for 9 or more credits.

Because its professional programs are in technological fields, NJIT attracts numerous applications for admission from foreign nationals. Relatively few applicants have the necessary educational background to qualify. The table of foreign visa student enrollment in Appendix B indicates less than 3 per cent of undergraduates and 4 per cent of graduate students have foreign visa status. In addition, however, there is an undetermined number of foreign-educated non-visa students.

## Undergraduates

In a discussion of student profiles, NJIT undergraduates are now classified as:

1. Full-time undergraduates, predominantly in attendance during the day and in the 18-24 age bracket.
2. Part-time undergraduates, predominantly in attendance during the evening, employed, and in the 25-34 age bracket; also included are younger part-time students temporarily registering for a majority of their coursework in evening classes.
3. Division of technology Certificate program students. Part-time employed students, primarily in the 25-34 age group, taking lower division courses for credit.

The size of the fall 1979 undergraduate class is up modestly relative to 1978, owiig to a substantial increase in applications; 24 per cent in transfer applications and 16 per cent in freshman applications. Current estimates indicate an increase of roughly 74 full-time equivalent students above the number budgeted for the 1979-1980 year.

The table on page 2-6 indicates the enrollment of full-time and part-time students in each division of the Institute. Trends in the ratios are difficult to ascertain because the criterion for differentiating between part-time and full-time undergraduates was changed in 1977. Prior to that year all evening division students were classified as part-time and no distinction as to credits was recorded for day students.

From 1974 to 1976, the ratio of evening/day undergraduates decreased from 32.3 per cent to 30.8 per cent; from 1977 to 1978 the ratio of part-time/full-time undergraduates increased from 30.9 per cent to 43.7 per cent, and in 1979 to 48.2 per cent.

The Certificate program of the Division of Technology suffered a 12 per cent loss of enrollment from 1977 to 1978; this decline was reduced to 2.3 per cent from 1978 to 1979. All DOT students are part-time.

## Educational Opportunity Program

For the ten years of its existence, NJIT's Educational Opportunity Program (EOP) has demonstrated that it can assist educationally disadvantaged students to complete a degree program, overcoming formidable academic, economic, and personal obstacles. These students are overwhelmingly from minority groups.

A recent report of the Engineering Manpower Commission places NJIT 20th in terms of minority enrollment in engineering among U.S. institutions, and second in terms of Bachelor of Science Degree graduates in engineering. This apparent disparity reflects the Institute's success in retaining minority students to graduation. It should be emphasized that not all minority students enter the institutions through the Educational Opportunity Program.

EOP students are succeeding despite their initial inability to meet the traditional criteria for admission to the Institute. They are supported by tutors, special academic programs, financial aid, and personal, academic, and career counseling.

The growth in EOP enrollments during the past 5 years is shown in the table on the following page. Classification of students is this program

## EDUCATIONAL OPPORTUNITY PROGRAM

### ENROLLMENT BY CLASS AND SEX

| FALL OF YEAR | | SEMESTERS SINCE ENTRANCE | | | | TOTAL | GRADUATES |
|---|---|---|---|---|---|---|---|
| | | 0 TO 2 | 3 TO 4 | 4 TO 5 | 6 OR MORE | | |
| 1975 | | 68 | 64 | 32 | 27 | 191 | 15 |
| 1976 | | 80 | 50 | 39 | 33 | 202 | 16 |
| 1977 | | 73 | 65 | 47 | 42 | 227 | 19 |
| 1978 | | 73 | 56 | 42 | 60 | 231 | 25 |
| | ENTERING FRESHMEN | CONTINUING FRESHMEN | SOPHOMORES | JUNIORS | SENIORS | | |
| 1979 | 82 | 72 | 46 | 32 | 11 | 243 | 25 |

| YEAR | MEN | WOMEN |
|---|---|---|
| 1975 | 152 | 39 |
| 1976 | 159 | 43 |
| 1977 | 169 | 59 |
| 1978 | 171 | 60 |
| 1979 | 187 | 56 |

Source: E.O.P. Office

was changed from years attended to academic class this past fall, resulting in a more meaningful tabulation, as shown. Limitation both of funds and qualified applicants leads to a projected growth of 4 or 5 students per year for the next 5 years. At that time EOP enrollments will have risen to 95 first-time freshmen or approximately 15 per cent of the total class.

## Undergraduate Seniors - Placement

The graduates of the Class of 1979 experienced the best recruiting year of the classes that graduated in the seventies. The year was the most productive since the engineering "boom years" of the middle and late sixties.

The Placement Office saw 291 companies recruiting on campus in the fall of 1979 (10 per cent more than in 1978), the largest fall recruiting season ever, with a 35 per cent increase in company participation over 1978. Seventy-six per cent of the students responding to a survey reported having definite plans pertaining to employment, graduate school, or the military. Job referrals from corporations not recruiting on-campus but requesting resumes from our May graduates numbered 847.

Each year the demand for college graduates has been reflected in the salaries being offered. This trend continues with an overall increase of 11.3% for all graduates over the figures for 1978. Engineering technology graduates showed the highest percentage increase (14.3%) while the chemical engineering graduates commanded the highest monthly salary ($1664.00/month).

As of the final survey date (approximately July 1, 1979) there were some members of the Class of 1979 who were unemployed. These included students who had chosen not to accept job offers, and a small group who had not really begun to seek either a job or graduate school.

The table in Appendix C shows that all save a few of the employed graduates took professional employment or went on to graduate school.

## Graduate Students

Lacking sufficient residential facilities, the Institute has traditionally recruited its graduate students from the same population as its undergraduates, and, understandably, full-time graduate students have constituted a small minority. The majority of graduate students, working for local industry and research laboratories, have come from metropolitan-area schools; many of them have been NCE/NJIT graduates, and nearly all of the full-time graduate students are either foreign nationals and/or NJIT graduates.

As is true of all engineering oriented graduate schools in the country, NJIT receives applications from many potential students from other countries. Admissions from this group (as well as from domestic applicants) has been selective. As a result, foreign graduate students who are in the United States on student visas constitute less than 5% of the graduate student body. The majority of these students are Asian, and the percentage has not changed substantially over the past six years, as shown in the table in Appendix C.

The graph on page 2-9 shows the trends in graduate enrollments. In this graph and in the enrollment table in Appendix B, full-time students are defined in terms of academic residence rather than credits, as this definition is more useful in planning for research assistants, teaching assistants, and housing. The ratio of part-time to full-time students each year since 1974 has been: 8.20, 6.14, 6.91, 7.21, 8.09, and 9.00. In this time span both groups declined in numbers until Fall 1979. Fall enrollment is up some 4 per cent, not including roughly 90 students enrolled in a new M.S. program in Computer Science offered at the Moorestown facility of RCA.

The age distribution of graduate students is shown in Appendix B. Understandably, the majority are older than undergraduates; both part-time and full-time students peak in the 25 to 34 year age bracket. Because full-time students tend to proceed to graduate work directly from undergraduate school, the percentage of full-time students in the 21-24 age group is much greater than that of the part-time students. The converse is true in the 35 to 44 year span. All in all, the Institute appears to be witnessing the effect on enrollment of a combination of factors: strong demand for the technological university with a record of quality instruction, and growing recognition of NJIT's programs of research and public service. Another factor related to strength of enrollment is the residence hall, which opened in 1979 to accept a full occupancy of 210 students with a waiting list of 50. Represented in the dormitory are: 19 New Jersey counties, 4 other states and 4 foreign countries.

## 2.3 PROJECTED CHANGES IN STUDENT PROFILE

### Demographic Changes

The center of population from which NJIT has traditionally drawn its students has been gradually migrating southwestward from Essex County. Many industrial and research laboratories have moved out into the seven county area around NJIT and beyond. With this migration have gone many families whose children are likely to choose careers in the technological professions.

An improved highway network has permitted students to commute greater distances to NJIT. At the same time, it permits the student a choice of alternative technological institutions of higher learning.

The ethnic makeup of the metropolitan areas in Essex, Hudson, and Passaic counties is expected to continue a shift toward greater black and hispanic populations as the trend outlined above continues. NJIT must continue its efforts to inform residents of the opportunities in technological fields and to offer guidance for young people and their families in junior high, high schools and community colleges. The Institute's Center for Pre-College Programs was, in part, organized with this objective. The Educational Opportunity Program offers complementary services in this regard. At the same time, NJIT must expand its outreach over the larger geographical area.

### Age

Unlike other institutions, NJIT does not anticipate any great changes in the traditional age cohorts among its degree programs. The part-time employed person seeking to obtain basic or advanced degrees has traditionally been accomodated by NJIT's evening courses. Increased awareness of the Institute among industry's employees recruited from out-of-state should result in additional part-time undergraduate and graduate students, resulting in a slight increase in average age of the student body. Also, the Institute is experiencing and expects to witness a continued significant increase in continuing education courses and clientele that will assist the older professional to meet a variety of personal and professional objectives.

## Resident Population

Perhaps the greatest change will come about as a consequence of student housing. The presence of a resident population of 210 students in the first dormitory, added to fraternity and local housing of several hundred, has already had its effect upon the profile of the Institute. Additional housing, for which planning has been initiated, and the increased visibility program now under way, will ultimately result in approximately twenty per cent of the full-time undergraduate and graduate students residing on or adjacent to the campus. In addition to strenghthening the Institute, a residential population should have a positive impact upon the economy, contributing to the revitalization of Newark.

# CHAPTER III. ENROLLMENT PROJECTIONS

## 3.1 CURRENT TRENDS

### Undergraduate

The study of enrollments is based in part on an analysis of national, New Jersey and NJIT trends through 1976 presented in the NJIT Master Plan, Phase I, which will not be repeated here. However, data for the intervening years, 1977-1978 and 1978-1979 are tabulated in Appendix E.

The analysis of this section is restricted to programs in Engineering and Engineering Technology because these are the largest of NJIT's programs and, importantly, are areas for which national, state and regional enrollment and employment data are available. New Jersey Department of Labor Statistics employment projections are presented in more detailed form in Appendix E.

Enrollments of first-time full-time engineering freshmen, nationally have been continuously rising since the Fall of 1973 in an era of rising technological employment. The percentage of high-school students entering professional technological programs in New Jersey has lagged behind national trends, but shows signs of catching up.

INCREASES IN ENGINEERING FRESHMEN

| FALL 1977 to FALL 1978 | | |
|---|---|---|
| National | New Jersey | NJIT |
| 9.0% | 13.7% | 6.2% |

It is noted that NJIT's percentage increase was half that of the State as a whole.

Overall freshmen admissions patterns show a 45 per cent increase in applications over the period 1974-1979. Freshmen enrollments fluctuated between 626 and 752, averaging 670. There was no greater increase because student quality was improved through a gradual change of 13 per cent in selectivity. There was also a gradual drop of 11 per cent in yield over the years 1974 to 1977. Since 1977, yeild has been a nearly constant 54 per cent. It is noteworthy, however, that over the past three years (1977-1979) in which first-time freshman admissions remained approximately constant, the number of engineering freshmen declined by seven per cent, while the number of students aiming for NJIT's newer curricula increased by 16 per cent.

Certain conclusions developed in Master Plan Phase I still appear to apply, namely:

1. Demand by students for technological education is a function of employment prospects as perceived by high-school students and those who guide them.
2. Families with young people aspiring to professional careers in engineering have moved southwestward from the metropolitan area into counties from which commuting to NJIT is more difficult and other educational alternatives have become more attractive.
3. The indication that increasing demand for engineering education at NJIT has been less than half that in the state as a whole, coupled with item 2 above, makes necessary the conclusion that the current popular "image of Newark" in combination with the competition of Rutgers Engineering School, is increasingly inhibiting freshman engineering enrollments at NJIT.

In the case of Engineering Technology enrollments, NJIT is dependent on transfer students from the county colleges into the third year of the program.* Such transfer programs are still in a growth phase. However, the national and state trends shown below have significance apart from comparison with NJIT data.

INCREASES IN ENGINEERING TECHNOLOGY ENROLLMENTS

FALL 1977 to FALL 1978

| | National | New Jersey | NJIT |
|---|---|---|---|
| Full-Time Freshmen | -2.5% | +9.8% | N.A.* |
| Total | +1.2% | -9.7% | +9.2% |

---

*NJIT offers only upper division Engineering Technology.

New Jersey full-time freshmen enrollments bucked national trends because engineering technology is a relatively new field in New Jersey. However, the much smaller part-time enrollments increased nationally by 20.4 per cent but decreased in New Jersey by 32.3 per cent. This seeming anomaly follows the mixed signals publicized concerning employment opportunities for B.S.E.T. graduates. Frequent local publicity on job opportunities for June graduates always includes engineering very high on the list of favored occupations; engineering technology is never specifically mentioned.

The above discussion leads to the conclusion that it would be a serious error to base professional technological enrollment projections on the declining high school populations to the exclusion of demand, for future employment opportunities as perceived by the public during the year or two prior to high school graduation is an equally important factor.

The N.J. Department of Labor Statistics has predicted a rise in professional technological employment of 24 per cent in NJIT's seven-county proximate region and 33.1 per cent statewide from 1974 to 1985. This translates into annual increase of 2.4 to 3.3 per cent, but such a linear increase could be decreased by recessions and increased in more prosperous intervals. Were one to compute "demand" by adding employment opportunities due to retirements, deaths, and net out-migration of professionals leaving the state, the figure given above would double.

## Graduate

The figures for applications to NJIT graduate degree programs in engineering (the Master's being the largest component at NJIT) indicate another trend dictated by employment demand rather than population trends, as shown by the graph in Appendix E. For the period 1977-1979 increases in enrollments were as shown below.

INCREASES IN GRADUATE ENROLLMENTS

| FALL 1977 to FALL 1978 | | | 1979 |
|---|---|---|---|
| National | New Jersey | NJIT | NJIT |
| +4.4% | -10.1% | -11.0% | +13.3% |

The data for 1977-1978 for New Jersey and NJIT mask the general trend, which is more in line with the national increase. The drop was more than made up at NJIT the following year. In fact, graduate applications have increased 70 per cent in the last four years.

## Declining Number of High School Graduates

Countering the predicted increase in demand is the ongoing decrease in New Jersey public high school graduates. Projections for Spring 1979 to 1995 are tabulated in Appendix E and plotted on the following page.*

NEW JERSEY PUBLIC HIGH SCHOOL GRADUATES

| | 1980-1990 |
|---|---|
| Region | Decrease |
| New Jersey | 28% |
| 7 Counties** | 33% |

The data indicate that in the ten-year period, Spring of 1980 to Spring 1990, numbers of public high school graduates in the state will decrease by 28 per cent. However, NJIT faces a 33 per cent decrease in the seven-county region from which it has traditionally drawn nearly 90 per cent of its applicants.

## Long-Range Enrollment Projection Variables

The making of long-range enrollment projections is obviously no simple matter. There are factors affecting enrollments that cannot be reliably predicted, others that defy quantification, and doubtless some that are substantial but unknown. Therefore, it should be emphasized that the results to follow are projections, not predictions. They indicate what can occur if certain factors change over selected ranges of values.

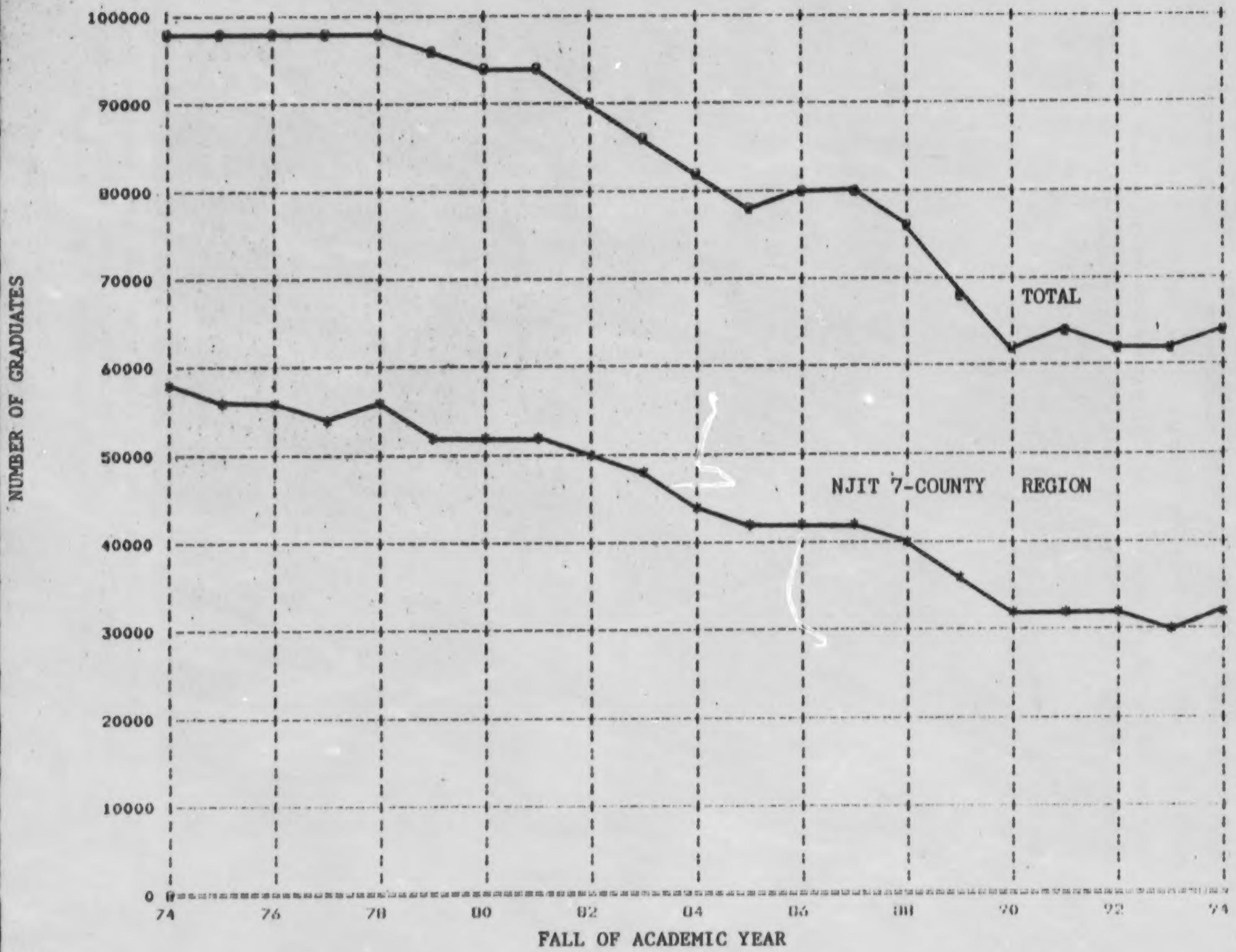
---

*Revised estimates as given in the memorandum, "Enrollment Projections Workshop" by Adolph Katz, D.H.E., Dec. 5, 1979.

**NJIT proximal 7 county region: Essex, Bergen, Union, Passaic, Hudson, Morris, and Middlesex.

## NEW JERSEY HIGH SCHOOL GRADUATES

1974-75 TO 1994-95



There are so many factors to be taken into account that in order to study a reasonably small number of combinations of these parameters, it is useful to divide them into two classes: (1) factors over which the Institute has little or no control, and (2) parameters which policy and action on the part of the Institute and the State can control or at least affect. The latter are the strategic variables which can be adjusted to attempt to achieve reasonable goals. What the results will be can then be examined for optimistic, intermediate, and pessimistic combinations of the uncontrollable factors.

Of the factors to be considered for NJIT in this section, there are seven over which the Institute has little or no control:

1. Declining public high school graduating class size
2. Increasing demand for professional technological career education*
3. Increasing numbers of foreign students in the United States
4. Historical "drawing-power" of the Institute
5. The "image" of Newark, coupled with access to alternative institutions
6. Transportation trends
7. Tuition and other costs (including grants availability)

Strategic factors included in category two are:

1. Increase in numbers of ethnic minorities and women attracted to the technological professions
2. Increase in Educational Opportunity Program students
3. Increase in foreign students in the United States**
4. Increase in out-of-state students***

---

* Including a general increase in the college-going rate of N.J. high-school graduates from 62% to 65% by 199, and a decrease in the net out-migration rate of N.J. students from 40% to 35% by 1990.

** It has been estimated that the number of foreign nationals in United States colleges will double in the next ten years, and that the majority of these students will be engaged in technological studies.

***A target increase of 15 per cent in first-time full-time freshman from out of state is given in "The 1980 Statewide Plan for Higher Education - First Draft", State of New Jersey Department of Higher Education, December, 1979.

5. Increased outreach by the Institute
    (a) Housing program
    (b) Community college transfer articulation program
6. New academic programs
7. Admissions policy, in particular, improvement in selectivity of freshmen.
8. Improved retention

## Enrollment Projections Based on Current Trends

A computer program has been written which computes, on a county-by-county basis, the projected numbers of freshman applications, acceptances, and enrollments. A sample output is reproduced in Appendix F.

If the declining high-school graduate pattern is considered as the only variable -- that is, demand, application rates, selectivity ratios, and yield are held to past weighted average values* -- the number of first-time full-time freshman (FTFT freshman) enrollees would follow the graph labeled LO on the following page.

The overall effects of the items listed in category one of the preceding page are assumed to result in a "net demand" such that the county-by-county application rates increase linearly by 1.5 per cent per year.
If all other factors are held at their historical weighted average values, the number of enrolled FTFT freshmen will increase as shown by the curve labeled MO. And, if this net demand rate should double in value to three per cent per year**, the number of FTFT freshmen would be as shown on the curve HO.

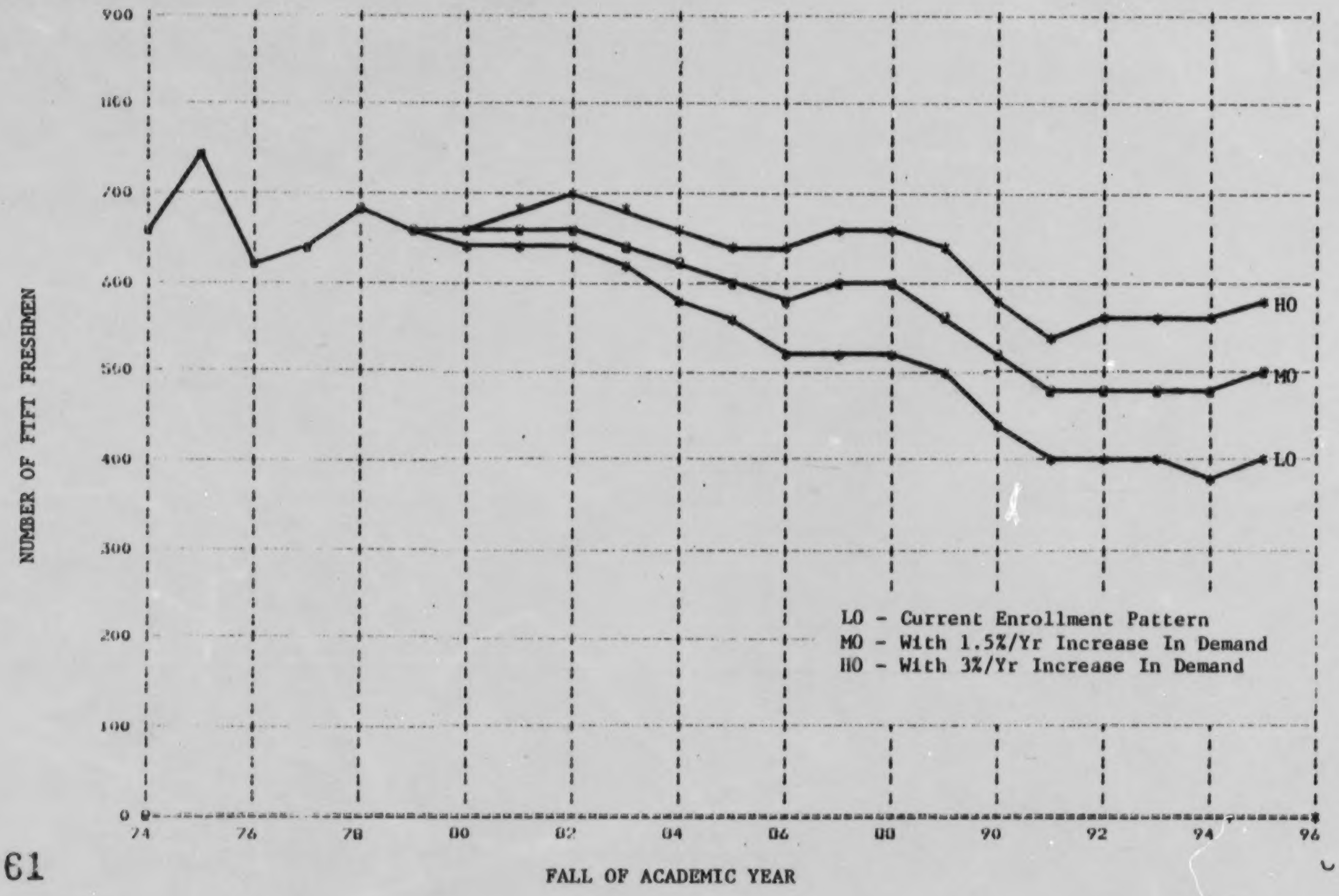
---

* Weighting is assigned as follows: 5 for the current year, 3 for the past year, and 2 for the preceding year. If no data are available for that year, the weights are taken as 5 and 3 for current and previous years.

**See middle paragraph of page 3-3.

## PROJECTED ENROLLMENTS OF FIRST-TIME FULL-TIME FRESHMEN

### BASED SOLELY ON DECREASE IN HIGH SCHOOL GRAUDATES AND INCREASED DEMAND



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62

The table below summarizes the results for the decade 1980-1990.

### ENROLLED FTFT FRESHMEN
### AS COMPUTED FOR DECREASE IN HIGH-SCHOOL GRADUATES AND INCREASE IN NET DEMAND

| | | ACTUAL | PROJECTED | | | |
|---|---|---|---|---|---|---|
| CASE | DEMAND | 1979 | 1980** | 1985 | 1990 | 1995 |
| LO | NO CHANGE | 661* | 643 | 552 | 444 | 401 |
| MO | +1.5% | | 651 | 602 | 515 | 495 |
| HO | +3.0% | | 662 | 647 | 590 | 586 |

The computer printout details these results for applications, acceptances and enrollees for each county, out-of-state, and foreign students.

A second computer program is used to project the number of full-time undergraduates, part-time undergraduates and B.S. degree recipients. If the current pattern of progression, based on weighted historical averages for continuation ratios[1], distribution factors[2], and part-time student ratios[3], remained constant, the resulting undergraduate enrollments and number of B.S. graduates would be projected as shown in the tables and graph sheets of the following two pages.

The dismal results of these projections will not be realized if the Institute is successful in meeting its enrollment planning objectives as outlined in the next section.

---

[1] Continuation. ratio = (Continuing full-time students)/Total full-time students of preceding semester), computed for lower division and each discipline in the upper division.

[2] Distribution factor = Proportion of full-time continuing sophomores going into a particular discipline (engineering, engineering technology, architecture, or other) for the junior year.

[3] Part-time ratio = (Part-time students)/(Full-time students)

*661 x (1980 high-school grads)/(1977-79 weighted average high-school grads) = 644. This is a simplified approximation to the process used in the computerized algorithm.

**The actual Fall 1980 FTFT Freshman enrollment was 672.

## UNDERGRADUATE FALL ENROLLMENTS AND UNDERGRADUATE DEGREES AWARDED

## PROJECTED ON THE BASIS OF CURRENT PATTERNS

| CASE | DEMAND | ACTUAL 1979 | PROJECTED 1980 | 1985 | 1990 | 1995 |
|---|---|---|---|---|---|---|
| FULL-TIME UNDERGRADUATE FALL ENROLLMENT | | | | | | |
| LO | NO CHANGE | 3067 | 2827 | 2656 | 2291 | 1928 |
| MO | +1.5% | | 2836 | 2809 | 2550 | 2253 |
| HO | +3.0% | | 2848 | 2949 | 2811 | 2570 |
| PART-TIME UNDERGRADUATE FALL ENROLLMENT | | | | | | |
| LO | NO CHANGE | 1490 | 1313 | 1287 | 1163 | 1024 |
| MO | +1.5% | | 1315 | 1335 | 1248 | 1134 |
| HO | +3.0% | | 1318 | 1380 | 1336 | 1244 |
| APPROXIMATE ANNUAL F.T.E. STUDENTS[1] | | | | | | |
| LO | NO CHANGE | 3427[2] | 3200 | 3040 | 2658 | 2259 |
| MO | +1.5% | | 3208 | 3195 | 2926 | 2602 |
| HO | +3.0% | | 3220 | 3341 | 3197 | 2934 |
| APPROXIMATE BACHELOR DEGREES AWARDED[3] | | | | | | |
| LO | NO CHANGE | 690 | 553[4] | 550 | 482 | 405 |
| MO | +1.5% | | 553 | 564 | 519 | 454 |
| HO | +3.0% | | 553 | 580 | 551 | 502 |

---

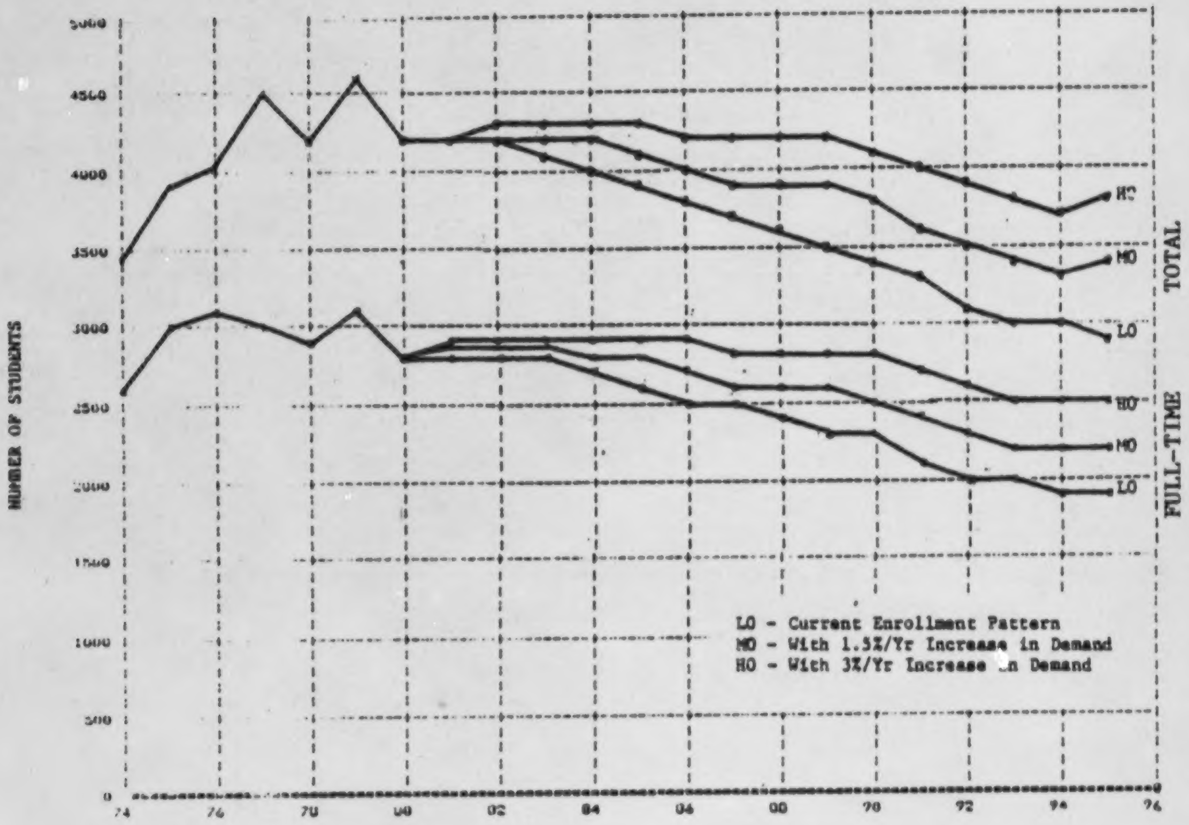
[1] Does not include Certificate Program and Summer Session.

[2] Based on average credits per student registration in 1979-1980

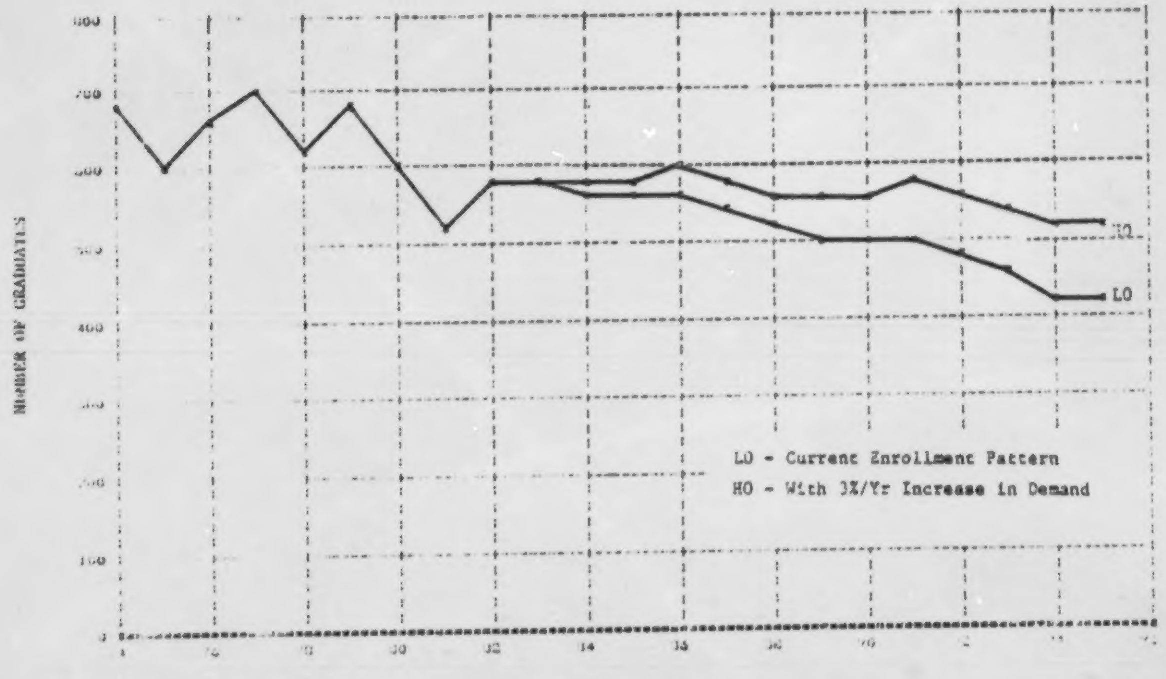
[3] Assumes continuation of historical pattern of number of full-time seniors who graduate in current year. Values given are sums of June graduates and graduates of the following October.

[4] The value 553 will be exceeded. Actual number of June 1980 graduates plus the number of graduates of the preceding October is 599.

## PROJECTED FULL-TIME AND TOTAL UNDERGRADUATE FALL ENROLLMENTS
### BASED SOLELY ON DECREASES IN HIGH SCHOOL GRADUATES AND INCREASED DEMAND



## PROJECTED NUMBER OF BACHELORS GRADUATES
### BASED SOLELY ON DECREASE IN HIGH SCHOOL GRADUATES AND INCREASED DEMAND



## 3.2 PLANS FOR AMELIORATING EFFECTS OF PROJECTED DECLINE IN NUMBERS OF AVAILABLE FRESHMEN

The projections of enrollments of the preceding section are assumed to be results that could occur if the Institute were constrained to its past patterns. In this Section, factors enumerated in Category two of Section 1 will be discussed -- factors which can enhance enrollments. Because the parameters for these factors were held to historical weighted-average values, the results of the preceding section (plotted as graphs LO, MO, and HO) will be dubbed the "status quo" projections.

### Enrollment Goals for NJIT in the Draft Statewide Master Plan

The Statewide Master Plan for Higher Education, cites various enrollment goals for NJIT. These goals, excerpted from the Plan, are given in the following table.

NJIT expects to achieve these goals by various means:

1. Additional dormitory housing
2. Building upon the positive image of the Institute
3. Outreach in recruiting
4. Cooperative efforts with County Collegs
5. Extension programs
6. New and timely academic programs
7. Increased enrollment of women and ethnic minorities
8. Improved retention

## GOALS RELATING TO ENROLLMENT
## FROM 1980 STATEWIDE PLAN FOR HIGHER EDUCATION

| | 1990 Goal |
|---|---|
| Improved freshman retention | 6% |
| Improved upper division retention | 6% |
| Increase in transfer students | 10% |
| Lower/Upper Division ratio | 45:55 |
| Increased part-time enrollment | * |
| Increased out-of-state freshmen | 15% |
| Increased total out-of-state students | 12% |
| Increase in E.O.P. freshmen | 10%[1,2] |
| Improvement of freshman profile | "Substantial" |
| Per cent of students housed: | |
| Institute housing | 10% |
| Total area housing | 20% |
| Full-time undergraduates | 3,200[3] |
| Part-time undergraduates | 1,700 |
| Total undergraduates | 4,900 |
| Total undergraduate F.T.E. | 3,800 |

[1] 1985 goal

[2] NJIT has already exceeded this goal

[3] DHE Projected value is 2,700

*No numerical goal specified

Plans for each of these areas are given elsewhere in this document. In this section an attempt is made to assign numerical parameters to the effects each of these actions can be expected to have on enrollments, in order to make projections showing how these plans can achieve the goals presented above.

## Parameters Affecting First-Time Full-Time Freshman Enrollments

The Institute's goals for housing, outreach to county colleges and outside the state, and enhancement of the perception of the Institute on a wider geographical basis, will result in an increase in demand by students from distant parts of New Jersey, by out-of-state students, and by students on foreign visas. In the computer program these groups are assigned to fictitious "counties":

a. The increase in the NJIT college-going rate which applies to commuting students* from "Northwest" and "Southern" counties is taken to be twice that for the New Jersey seven county region. Nevertheless, because of the declining high school population (especially in the southern region of the state) projected commuting freshmen from these areas will decrease from the historical weighted average value of 14 to 13 in the low - demand (LO) projection, and increase only to 21 in the highest (H3) case by 1990.

b. Increase in freshman students resulting from housing availability is based on out-of-state and distant New Jersey students (lumped together as "out-of-state") and foreign visa students.

   The former are postulated as coming from a "county" which sends a weighted average number of nine freshmen to NJIT. This number is projected to increase each year exponentially, according to the algorithm

$$1.0 + 0.001 \times \text{OSPY}$$
$$\text{OSPB}$$

---

*Because historical weighted values are used as the basis for projections from these areas, they apply to students attending NJIT prior to the presence of on-campus housing. Students expected to be attracted to the Institute because of housing availability are included in the same category as out-of-state students.

where,

OSPY = 50 (resulting in exponent of 1.05)
OSPB = Number of out-of-state freshmen of preceding year (beginning with 10 in 1980)

If the goal is fully met, the result of this component would be an increase from 9 to 10 students in 1979 to 51 by 1990.

The foreign visa students are programmed as if they come from another fictitious county ("Foreign") whose population is linearly increasing from an arbitrary 1000 in 1979. The college-going rate for this group is assumed constant. The result would be an increase in this group from 4 to 31 students by 1990.

The total of the increase in students in these two groups represents some 68 of the freshmen to be housed on campus by 1990. Assuming presently commuting freshmen from these areas also will wish dormitory accomodations, the number rises to 100.

c. The increase in demand by women and ethnic minority students is included in the general demand figures discussed in the preceding section. However, given modest extra funding and increases in eligible high-school graduates, the freshman E.O.P. enrollment is projected to increase by 3 students per year to 1990, yielding an increase from 81 (12.3%) in 1979 to 114 (17.3%) in 1990.

d. An increase in the college-application rate is expected from new academic programs. An exponential rise is to be expected and the algorithm used is:

$$\text{ACCAR} \times (1 + \text{NEWP}/1000)^{\text{YEAR} - 1980}$$

where

ACCAR is the historical weighted-average college application rate (of each N.J. county)

NEWP = 12 is the factor assigned for new programs.

In the absence of the new academic programs, even in the high-demand case (H3), first-time full-time freshman (FTFTF) enrollment from NJIT's proximate seven-county region is projected to decline from 630 in 1979 to 560 in 1990. The additional programs should increase this latter value to 645.

The results, which assume constant selectivity and yield ratios, are summarized in the two tables on the following page. In the first table it is assumed that all the goals are fully achieved; in the second, that they are only partially achieved.*

On the pages that follow, graphs are shown for ten of the cases discussed in this and the preceding section.

Computer printouts of the summary sheets, given in Appendix F for Case M3, indicate that the statewide college application rate (and college-going rate) must be increased considerably if these goals are to be met.

---

*For cases labeled "goals partially achieved", growth parameters were halved.

## ENROLLMENT CHANGES IN FTFT FRESHMEN AS PROJECTED

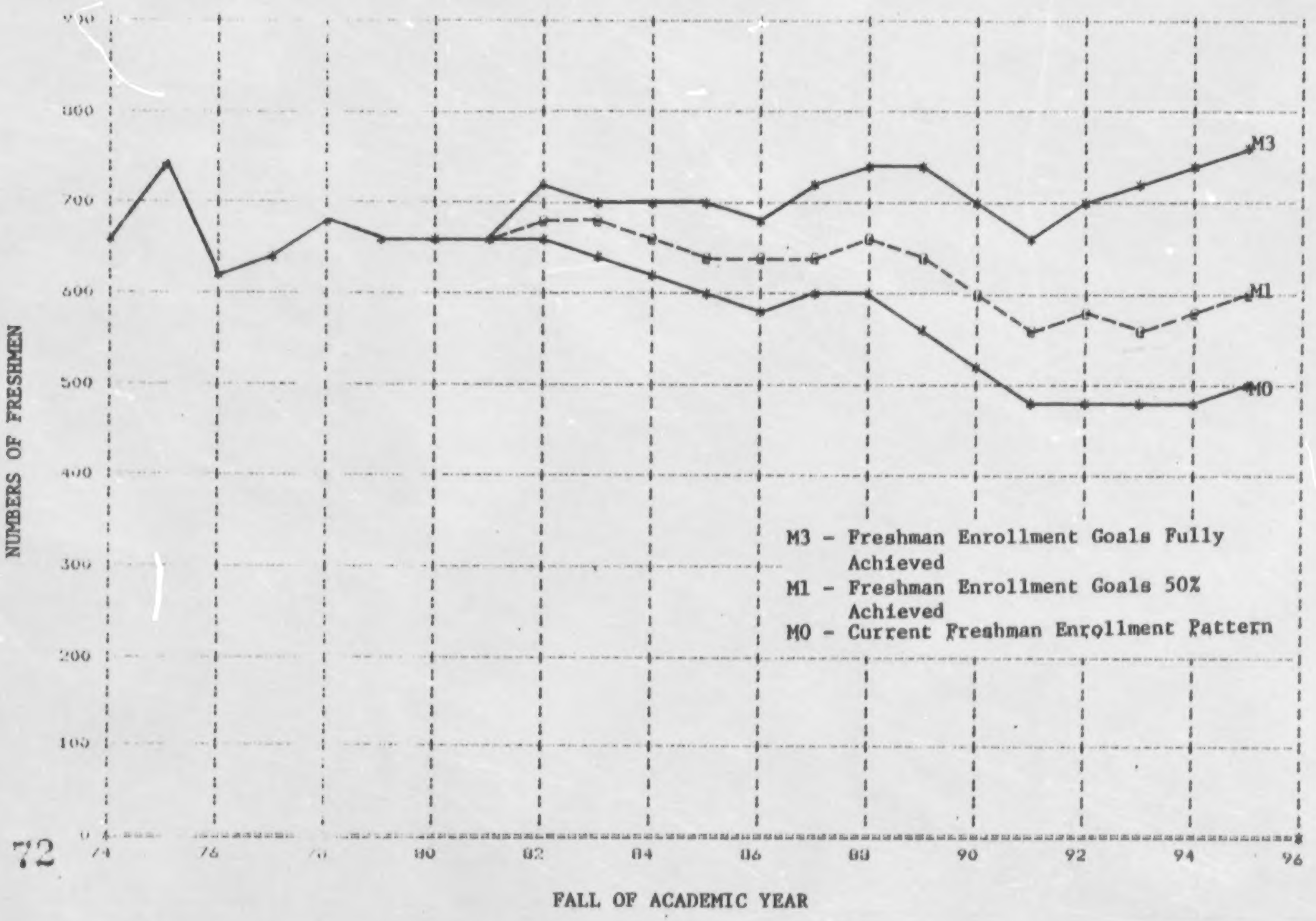
| | | 1990 | | | |
|---|---|---|---|---|---|
| | | ENROLLMENT GOALS FULLY ACHIEVED | | | |
| | 1979 | CASE LO | CASE L3 | CASE M3 | CASE H3 |
| SEVEN COUNTIES | 630 | 418 | 480 | 563 | 645 |
| NORTH & SOUTH | 19 | 13 | 15 | 20 | 23 |
| E.O.P. INCREASE | 0 | 0 | 35 | 35 | 35 |
| FOREIGN | 5 | 4 | 31 | 31 | 31 |
| OUT-OF-STATE | 7 | 9 | 51 | 51 | 51 |
| TOTAL | 661 | 444 | 612 | 700 | 785 |

## ENROLLMENT CHANGES IN FTFT FRESHMEN AS PROJECTED

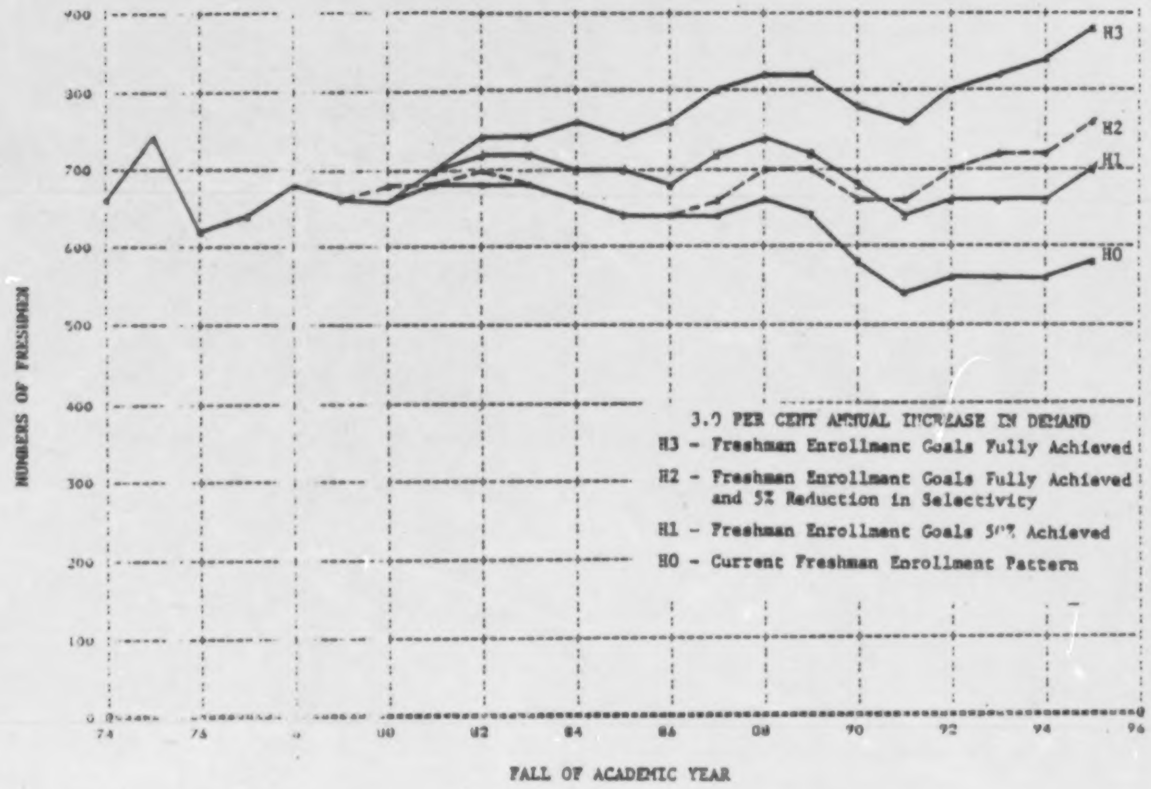
| | | 1990 | | | |
|---|---|---|---|---|---|
| | | ENROLLMENT GOALS PARTIALLY ACHIEVED | | | |
| | 1979 | CASE LO | CASE L1 | CASE M1 | CASE H1 |
| SEVEN COUNTIES | 630 | 418 | 449 | 521 | 595 |
| NORTH & SOUTH | 19 | 13 | 15 | 17 | 19 |
| E.O.P. INCREASE | 0 | 0 | 16 | 16 | 16 |
| FOREIGN | 5 | 4 | 18 | 18 | 18 |
| OUT-OF-STATE | 7 | 9 | 21 | 21 | 21 |
| TOTAL | 661 | 444 | 519 | 593 | 669 |

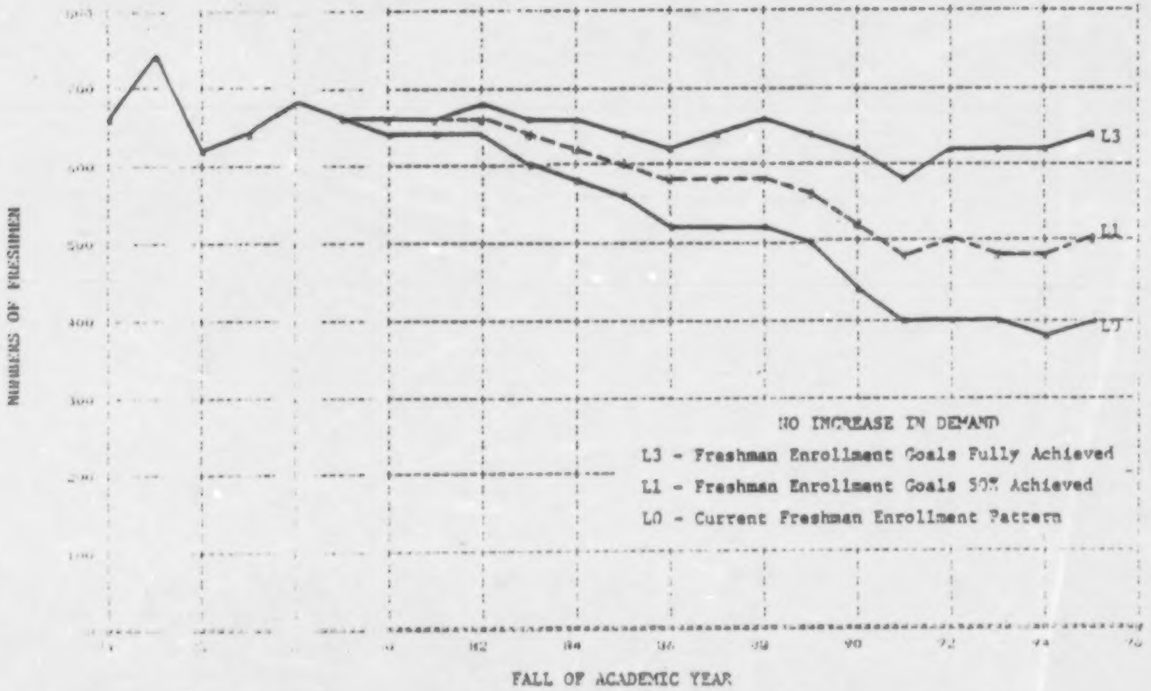
## PROJECTED NUMBERS OF FIRST-TIME FULL-TIME FRESHMEN

**SHOWING EFFECTS OF 1.5% ANNUAL INCREASE IN DEMAND**



## PROJECTED NUMBERS OF FIRST-TIME FULL-TIME FRESHMEN
## SHOWING EFFECTS OF 3.0% ANNUAL INCREASE IN DEMAND
## COMPARED WITH NO INCREASE IN DEMAND





## STATEWIDE NJIT COLLEGE APPLICATION RATE AND COLLEGE GOING RATE

| | 1990 | | | | |
|---|---|---|---|---|---|
| | Weighted Average | ENROLLMENT GOALS FULLY ACHIEVED | | | |
| | | CASE L0 | CASE L3 | CASE M3 | CASE H3 |
| College Application Rate | 1.77 | 1.68 | 1.93 | 2.26 | 2.60 |
| College Going Rate | 0.667 | 0.630 | 0.723 | 0.852 | 0.976 |

Note: All values are in per cent.

It is of note that in keeping the individual county application and college-going rates constant as in Case L0, the statewide NJIT rates decrease appreciably. This phenomenon comes about because of the dominant numbers of students coming from counties with high-school graduate numbers decreasing faster than those of the state as a whole.

### Freshman Selectivity and Yield

Selectivity and yield ratios are functions of county. In the NJIT 7-county proximal region, selectivity has historical weighted-average values ranging from 71.6% in Morris county to 64% in Essex.* The 1979 values were 65% and 62%, respectively. Yield is, of course, a complex function of selectivity, and average values varied from 51.7% for Morris to 66.9% for Essex. The 1979 values were 51.5% and 67.3%, respectively.

In the program, yield is assumed to change by 2/3 the amount of any change in selectivity. That is, for each three additional students admitted, 2 will enroll. This algorithm is applied to New Jersey applicants, but is not used for out-of-state, foreign, nor for increases in E.O.P. freshmen, all of which were projected on the basis of enrollments rather than applicants.

The graphs following show the result of a decrease of 5 percentage points in the selectivity ratio applied gradually (1% per year over the next five years) to each county; using the medium-demand case assuming all enrollment goals are achieved. The effect on the high-demand case is graphed on page 3-19.

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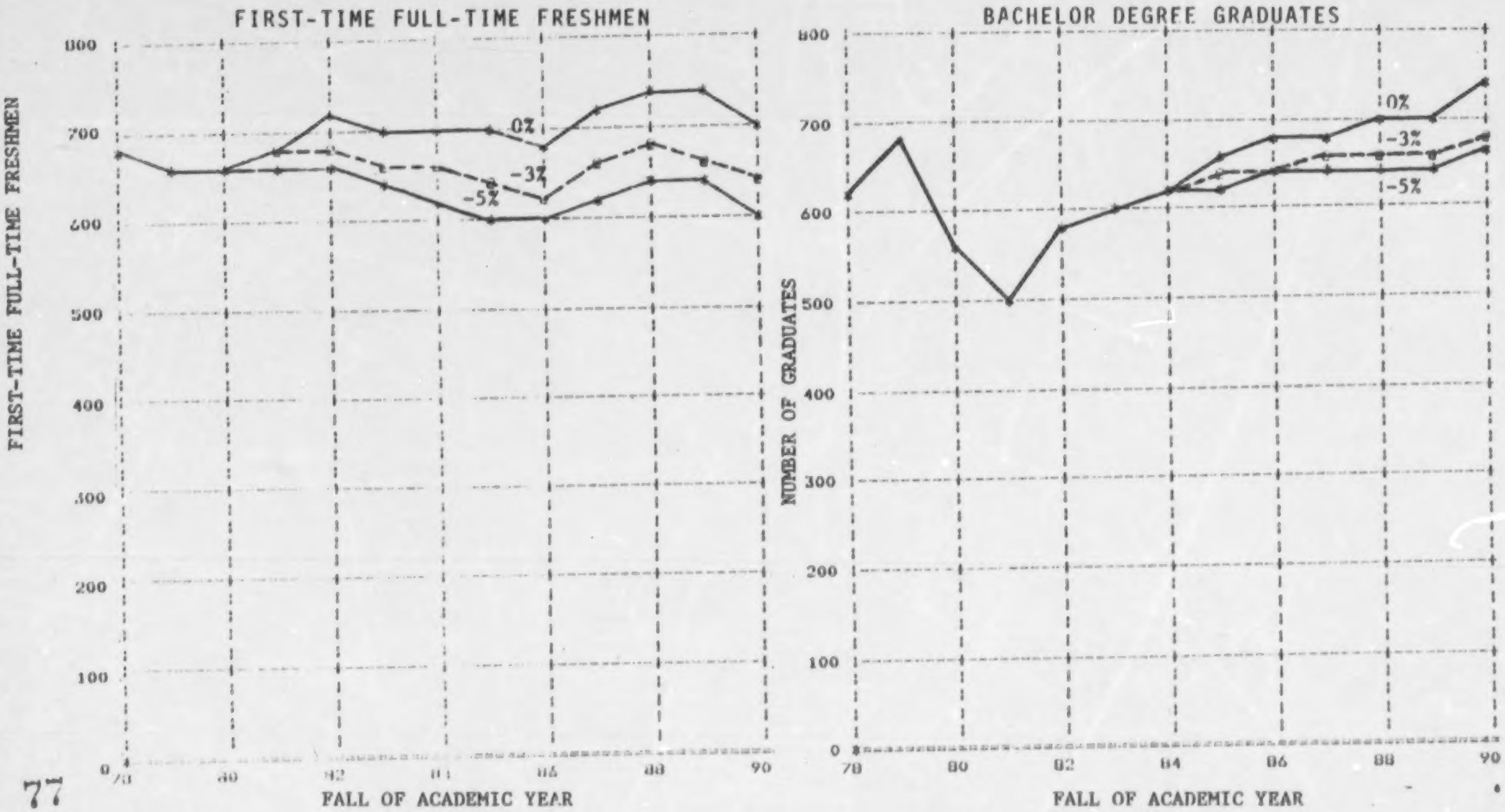
*Figures given are overall values, including E.O.P. students.

## EFFECTS OF CHANGE IN SELECTIVITY RATIO
## ON ENROLLMENT PROJECTIONS
## FOR MEDIUM DEMAND CASE WITH GOALS FULLY ACHIEVED
## CASE M3

| SELECTIVITY CHANGE | 1985 | 1990 | 1995 |
|---|---|---|---|
| DECREASE IN FIRST-TIME, FULL-TIME FRESHMEN | | | |
| -2% | 41 | 41 | 41 |
| -3% | 61 | 60 | 58 |
| -5% | 101 | 99 | 96 |
| DECREASE IN FULL-TIME FALL ENROLLMENT | | | |
| -2% | 115 | 165 | 145 |
| -3% | 179 | 246 | 214 |
| -5% | 294 | 402 | 358 |
| DECREASE IN PART-TIME FALL ENROLLMENT | | | |
| -2% | 32 | 58 | 51 |
| -3% | 51 | 88 | 72 |
| -5% | 90 | 42 | 124 |
| DECREASE IN APPROXIMATE ANNUAL F.T.E. STUDENTS | | | |
| -2% | 113 | 174 | 155 |
| -3% | 177 | 261 | 227 |
| -5% | 297 | 428 | 382 |

# PROJECTED NUMBERS OF FRESHMEN AND BACHELOR GRADUATES
## SHOWING EFFECTS OF DECREASE IN SELECTIVITY RATIO
## MEDIUM-DEMAND CASE WITH ENROLLMENT GOALS FULLY ACHIEVED



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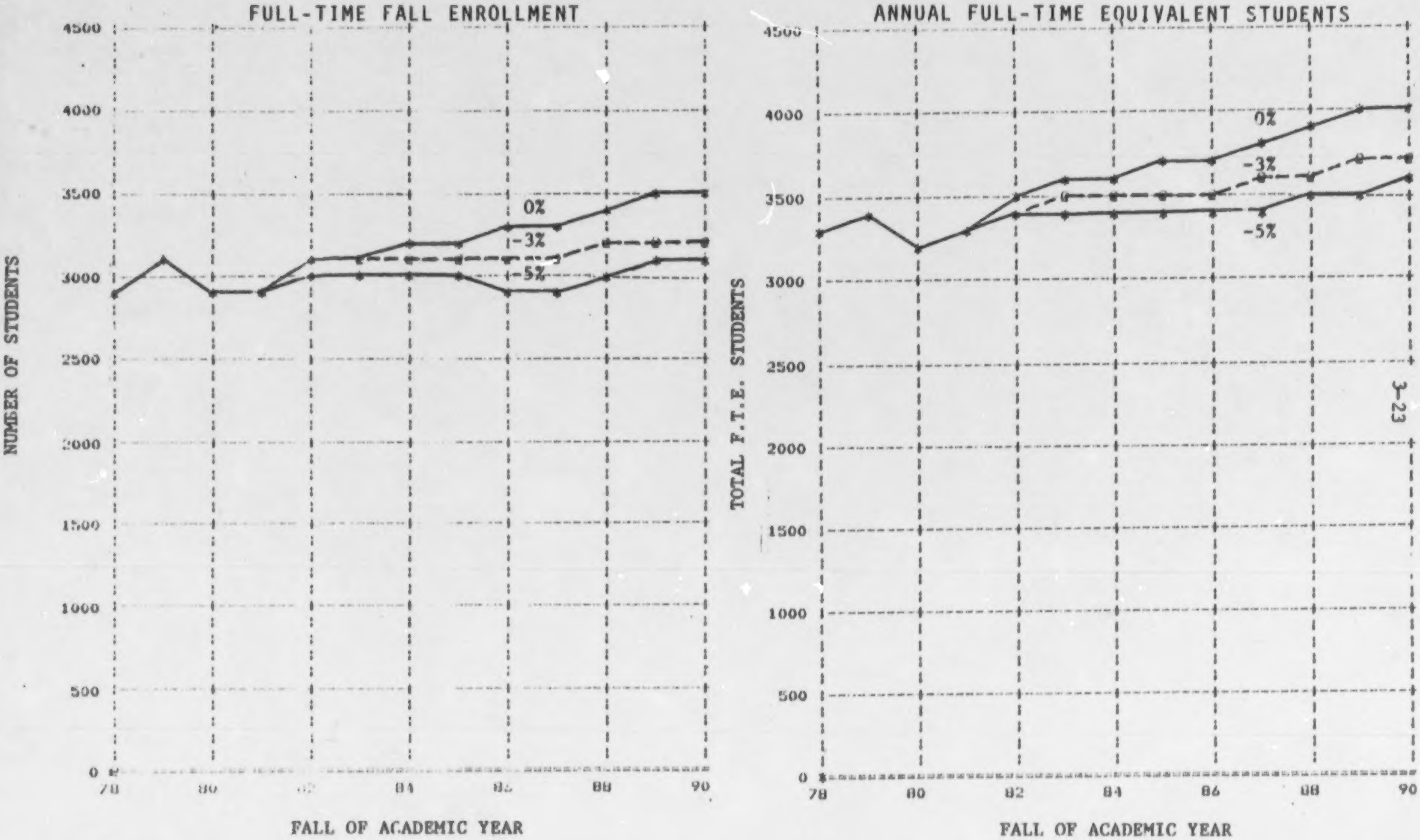
## PROJECTED NUMBERS OF FULL-TIME AND TOTAL FULL-TIME EQUIVALENT UNDERGRADUATES

### SHOWING EFFECTS OF DECREASE IN SELECTIVITY RATIO

### MEDIUM-DEMAND CASE WITH ENROLLMENT GOALS FULLY ACHIEVED



Looked at in a different manner, the printout on the next page shows for the high-demand case, how the selectivity would have to vary if the FTFTF enrollment were to be kept constant over the years at 650 students. Where "additional admissions" is a negative number, a tighter selectivity would still enroll 650 students; where "additional admissions" is positive, selectivity would have to be relaxed.

SELECTIVITY AND YIELD REQUIRED FOR 650 FTFTF

| | HIGH-DEMAND CASE, H2 | | |
|---|---|---|---|
| | SELECTIVITY | YIELD | YEAR |
| MAXIMUM | 65.0 | 56.2 | 1980 |
| MINIMUM | 60.8 | 51.0 | 1993 |
| | MEDIUM-DEMAND, CASE H2 | | |
| MAXIMUM | 66.1 | 57.1 | 1980 |
| MINIMUM | 60.8 | 51.2 | 1992 |

# PROJECTIONS OF SELECTIVITY RATIO WHICH WOULD YIELD 650 FRESHMEN

## FOR HIGH-DEMAND CASE WITH 5% NOMINAL DECREASE IN SELECTIVITY RATIO

5

```
                       NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                              DATE:  5-23-80   PAGE 10
ENROLLMENT PROJECTIONS, RUN 6 :     AJR=4,4,2,0,1;ICR=10,10.10.20,       05/23/80
CASE H2X; OTY=50,GSPD=10,D=Y=0; FSPY=60,IEOP=04; DSLC=05; JOBS=30,50; NEWP=12

VALUES OF NEW JERSEY SELECTIVITY, ADMISSIONS, AND YIELD REQUIRED TO OBTAIN 650 FIRST-TIME FULL-TIME FRESHMEN

FALL   1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995
       #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### ####

NEW JERSEY FIRST-TIME FULL-TIME APPLICATIONS. (COMPUTED DATA FOR YEARS 1980 TO 1995)

       1655 1620 1829 1744 1811 1880 1872 1869 1835 1816 1893 1963 1912 1770 1671 1756 1760 1792 1906

SELECTIVITY RATIOS (PER CENT)

     68.46 70.27 62.27 63.89 61.89 60.39 60.99 61.01 62.22 62.13 59.36 56.76 56.97 59.21 60.67 57.02 55.27 54.17 51.69
ADDITIONAL ADMISSIONS  (REQUIRED TO ACHIEVE 650 TOTAL)

          0    0    0  -36  -56  -69  -38  -15   24   20  -29  -81  -79  -29   -2  -66  -98 -119 -177

ADMITTED
       1132 1144 1139 1114 1121 1135 1142 1140 1142 1128 1124 1114 1089 1053 1014 1001  973  971  985

YIELD RATIOS (PER CENT)

     55.65 58.13 56.98 56.67 55.63 54.31 53.30 52.66 51.72 51.45 50.86 50.21 50.17 50.68 51.25 50.09 49.40 48.98 48.26


TOTAL N. J. FIRST-TIME FULL-TIME FRESHMEN   (COMPUTED FOR YEARS 1980 TO 1995)

        630  665  649  631  623  616  608  600  590  580  571  559  546  533  519  501  480  475  475

TOTAL FIRST-TIME FULL-TIME FRESHMEN, INCLUDING OUT-OF-STATE AND FOREIGN STUDENTS

        644  680  661  650  650  650  650  650  650  650  650  650  650  650  650  650  650  650  650
```

## 3.3 UNDERGRADUATE ENROLLMENT PROJECTIONS

As for the freshman projections, the basic cohort survival methodology is used. Full-time students move from freshmen to graduation according to pre-determined continuation ratios. Part-time students in each class are taken as a percentage of full-time students. New full- and part-time students are entered into each class.*

Distribution factors are assigned at the end of the sophomore year to break the student body into four disciplines: Engineering, Engineering Technology, Architecture, and "Other", after which the cohort survival method is applied by discipline.

### Junior Distribution Factor

Because of the rapid growth in newer programs, provision is made for changing the proportion of sophomores going into each discipline as the overall enrollment changes.

This parameter has a negligible effect on total enrollments, but will affect the number of students in each academic discipline.

### Part-Time Student Ratios

The ratio of part-time to full-time students is held constant at the historical weighted-average value for each class and discipline. This ratio is used to compute part-time students for each class in each discipline. The values used are given in the table below.

---

*The Department of Higher Education has projected total full-time undergraduates to grow from 2900 in 1978 to 3000 in 1985 and then decline to 2700 in 1990, as shown in the table and graph of Appendix E.

## PART-TIME STUDENT RATIOS*

| Discipline | Freshman | | Sophomore | |
|---|---|---|---|---|
| | Fall | Spring | Fall | Spring |
| All Junior Division | 0.237 | 0.277 | 0.321 | 0.390 |
| | Junior | | Senior | |
| | Fall | Spring | Fall | Spring |
| Engineering | 0.359 | 0.457 | 0.480 | 0.471 |
| Engineering Technology | 1.785 | 2.609 | 1.899 | 1.359 |
| Architecture | 0.065 | 0.068 | 0.208 | 0.092 |
| 5th Year | | | 0.471 | 0.195 |
| Other | 0.349 | 0.299 | 1.071 | 0.611 |

---

*Computed as weighted average from 1978-1979 data.

### New Programs

The introduction of new programs to meet the current technological needs of society, government and industry is one of the efforts counted on to supplement the demand for current programs, as discussed earlier. The numbers of additional enrollments projected for these new programs are as shown in the accompanying table.

### PROJECTED INCREASE IN UNDERGRADUATE ENROLLMENT
### DUE TO THE INTRODUCTION OF NEW ACADEMIC PROGRAMS
### (CASE M3)

| | 1985 | 1990 | 1995 |
|---|---|---|---|
| FTFT FRESHMEN** | 42 | 76 | 102 |
| FULL-TIME | 130 | 268 | 351 |
| PART-TIME | 40 | 92 | 119 |
| TOTAL | 170 | 360 | 470 |
| FTE STUDENTS | 130 | 282 | 371 |
| GRADUATES | 11 | 41 | 53 |

---

**For definitions, see Note on following page.

On the other hand, the increase in demand as projected for existing Institute academic programs, using the same (M3) case is shown in the next table.

### PROJECTED INCREASE IN UNDERGRADUATE ENROLLMENT
### DUE TO 1.5%/YR INCREASE IN DEMAND
### FOR EXISTING ACADEMIC PROGRAMS
### (CASE M3 AND L3)

| | 1985 | 1990 | 1995 |
|---|---|---|---|
| FTFT FRESHMEN | 49 | 88 | 115 |
| FULL-TIME | 161 | 314 | 402 |
| PART-TIME | 48 | 109 | 135 |
| TOTAL | 209 | 423 | 537 |
| FTE STUDENTS | 162 | 329 | 424 |

*Note: In this and subsequent tables
FTFT FRESHMEN = First-time full-time fall freshmen enrollment.
FULL-TIME Total fall undergraduate headcounts.
PART-TIME excluding certificate program students.
TOTAL = Sum of full-time and part-time fall headcounts.
FTE STUDENTS = Approximate Annual full-time equivalent undergraduate students, excluding certificate and summer programs.
GRADUATES = Approximate number of graduates projected from senior enrollment.

## Retention

Successful implementation of the plan to improve retention will increase enrollments to an appreciable extent. The goal is programmed as an increase in the full-time student continuation ratios of one percentage point each for sememsters two, three and five, and two percentage points for semester four -- the middle of the sophomore year where dropouts are greatest. These changes in the class continuation ratio are assumed to be divided equally per year over a six year period starting in Fall 1981. Thus the total increase in the ratio will be five per centage points by the year 1987.

## PROJECTED INCREASE IN UNDERGRADUATE ENROLLMENT
### DUE TO IMPROVED RETENTION
### FALL SEMESTER

| | 1985 | 1990 | 1995 |
|---|---|---|---|
| Full-Time | 41 | 72 | 69 |
| Part-Time | 17 | 33 | 333 |
| Total | 58 | 105 | 102 |
| F.T.E. Students | 50 | 96 | 97 |
| Graduates | 11 | 28 | 25 |

## Extension Programs

The Institute's planned extension and outreach programs will significantly increase the numbers of transfer students into the junior year. This increase is expected to be greatest in the B.S.E.T. program. In the computer printout many of these transfer students appear as "new sophomores" because, lacking a discipline-specific sophomore course (usually a laboratory course not available at the two-year college of origin), they have not quite achieved the full number of junior division credits.

In the projection these students are entered as new full-time juniors. Some part-time students are automatically added according to the part-time student ratio for each discipline. The goals used in this projection are as follows:

### PROJECTED ANNUAL INCREASES IN F.T. JUNIOR TRANSFER STUDENTS
### DUE TO EXTENSION AND OUTREACH

| | FULL-TIME | PTR** | PART-TIME |
|---|---|---|---|
| Engineering | 4 | 0.359 | 1 |
| Engineering Technology | 4 | 1.785 | 11 |
| Architecture | 2 | 0.065 | 0 |
| Other* | 8 | 0.349 | 3 |
| Non-Matriculated | 1 | 6.862 | 7 |

---

*Expected to be largely CIS and BSIA transfers.

**Ratio of part-time to full-time students, fall semester of junior year.

## PROJECTED INCREASE IN FALL UNDERGRADUATE ENROLLMENT
## DUE TO JUNIOR TRANSFER STUDENTS
## FOR CASE M3

| | 1985 | 1990 | 1995 |
|---|---|---|---|
| Full-Time | 128 | 268 | 401 |
| Part-Time | 132 | 261 | 383 |
| Total | 260 | 529 | 784 |
| F.T.E. Students | 163 | 364 | 546 |
| Graduates | 48 | 118 | 176 |

The increase shown for part-time students is based on the assumption that all part-time student ratios remain constant through the years despite the changes in enrollment patterns that have been discussed.

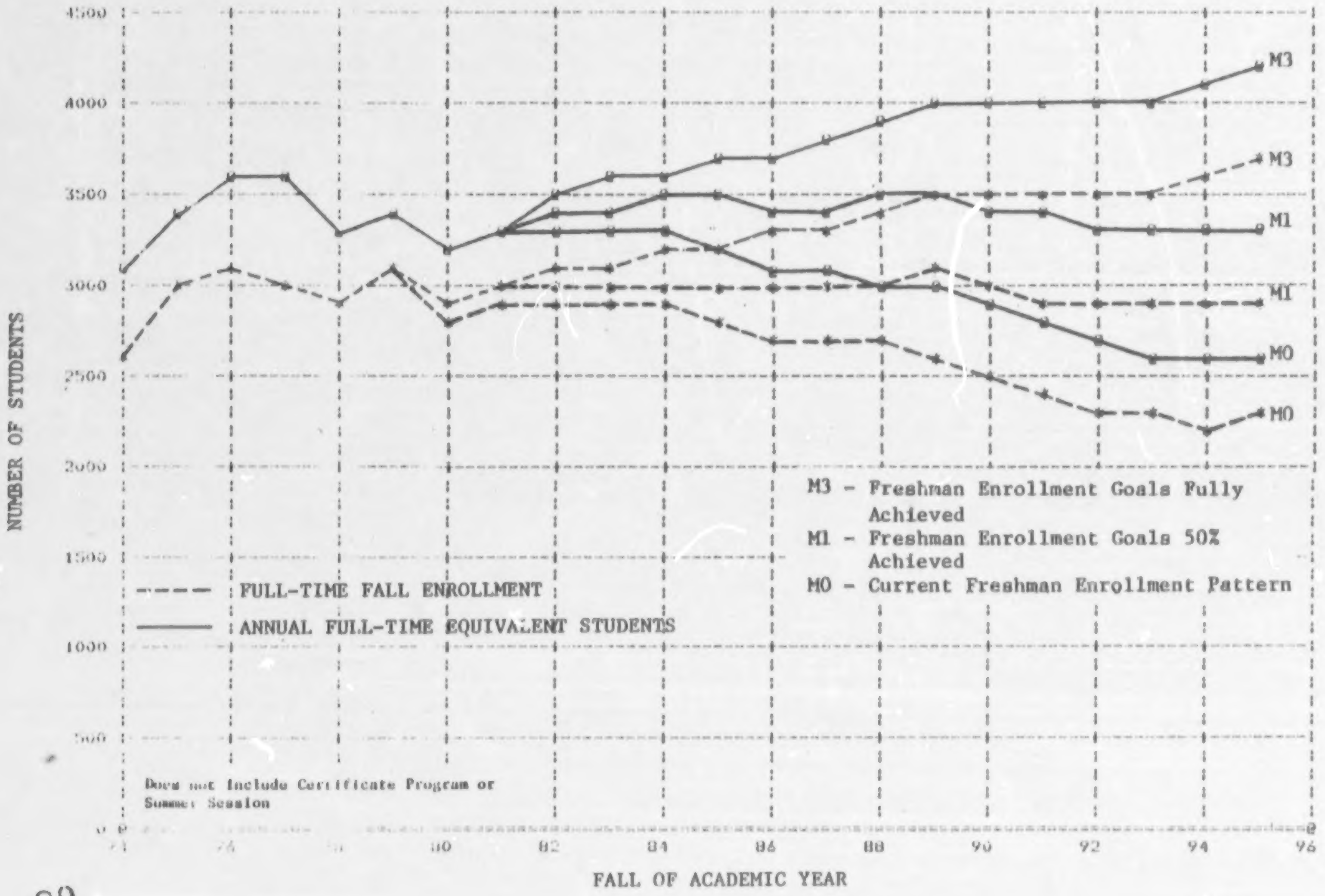
### Overall Projections of Undergraduate Enrollments

The complete computer printout for the medium demand case with all strategic enrollment goals fully achieved (Case M3) is given in Appendix F, together with the computer graph of total enrollment, full-time equivalent enrollment and bachelors degree gradautes. The breakdown of enrollments by discipline is summarized in the table at the end of this chapter for the years 1980, 1985, 1990 and 1995. In this table ranges of what are considered to be likely values are included in the tabulation. The low end of the chosen range is Case M1 (medium growth in demand with enrollment goals half achieved) and the high end is Case H3 (high demand with all goals fully achieved). The data tabulated are computed on the basis of current average values of selectivity and yield ratios. However, if conditions favoring the high end of the range prevail, a decrease in selectivity ratio of five percentage points could be gradually applied (Case H2), which would decrease enrollments nearly to the values for Case M3.

The graph sheets which conclude this section illustrate projections for some of the other sets of parameters in which the demand is assumed to be higher (three percentage points annual increase) and lower (no increase) compared with the case just discussed.

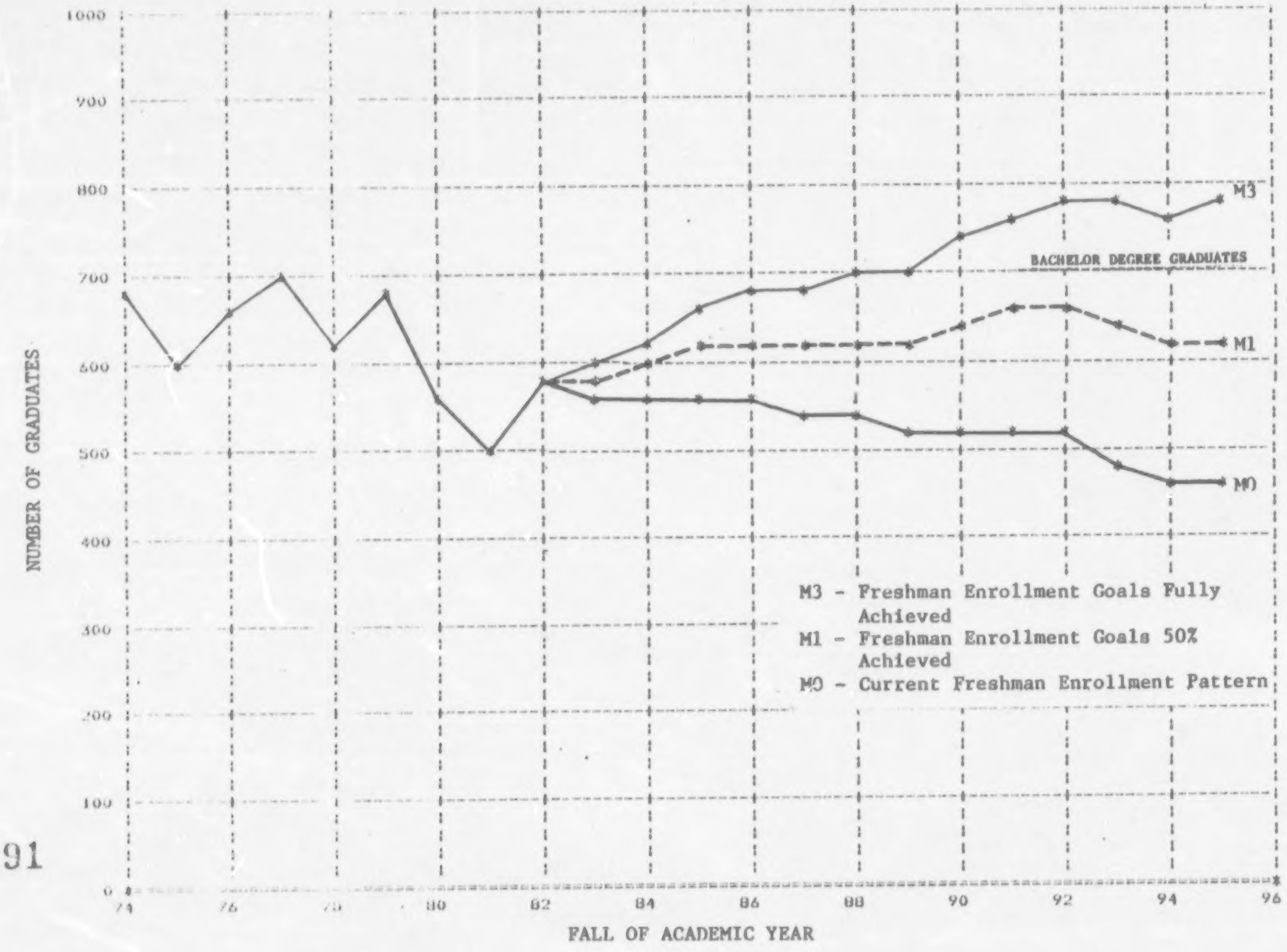
## PROJECTED NUMBERS OF FULL-TIME AND TOTAL FULL-TIME EQUIVALENT UNDERGRADUATES

### SHOWING EFFECTS OF ENROLLMENT GOALS ON MEDIUM-DEMAND CASE

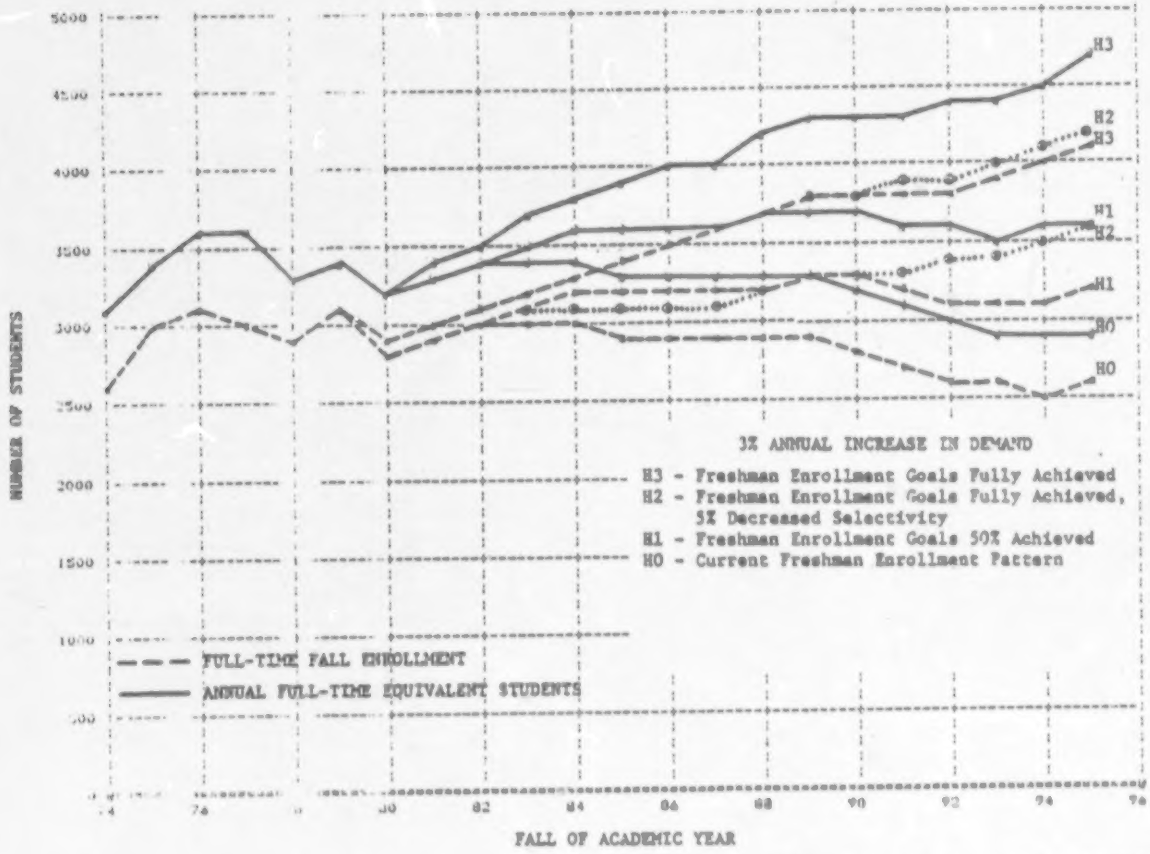


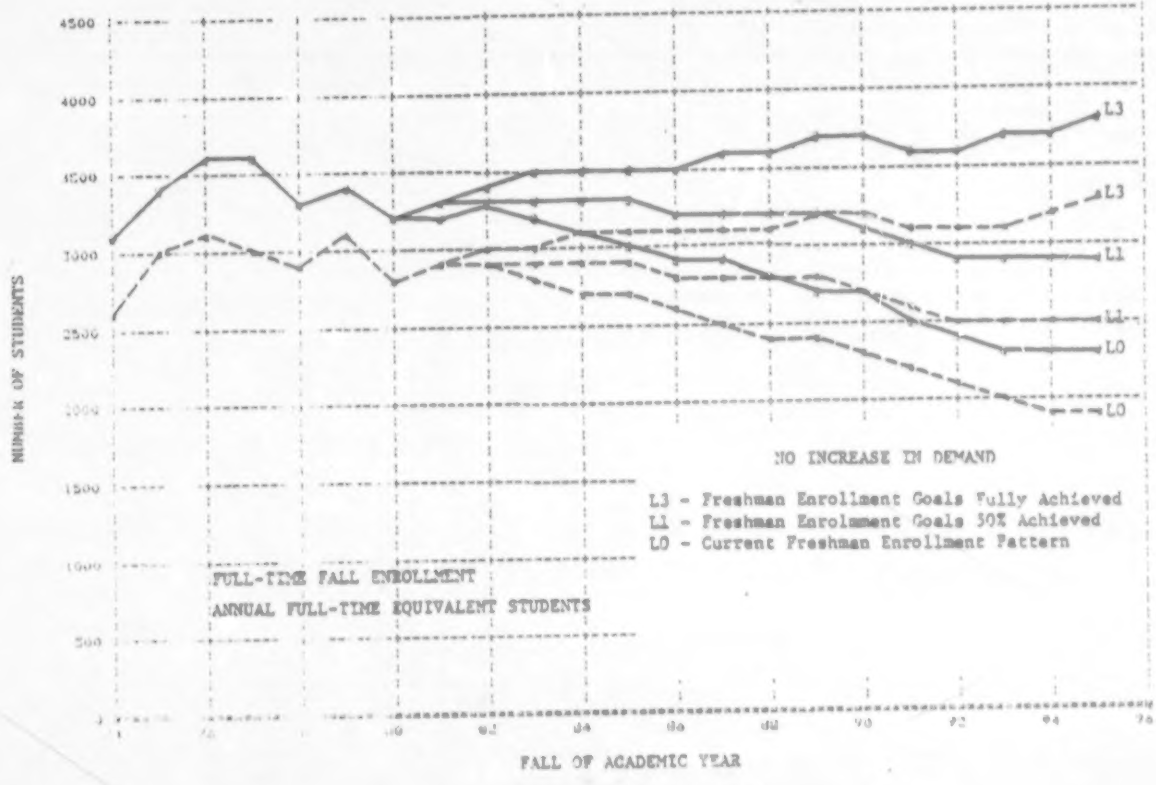
## PROJECTED NUMBERS OF BACHELOR DEGREE GRADUATES

### SHOWING EFFECTS OF 1.5% ANNUAL INCREASE IN DEMAND

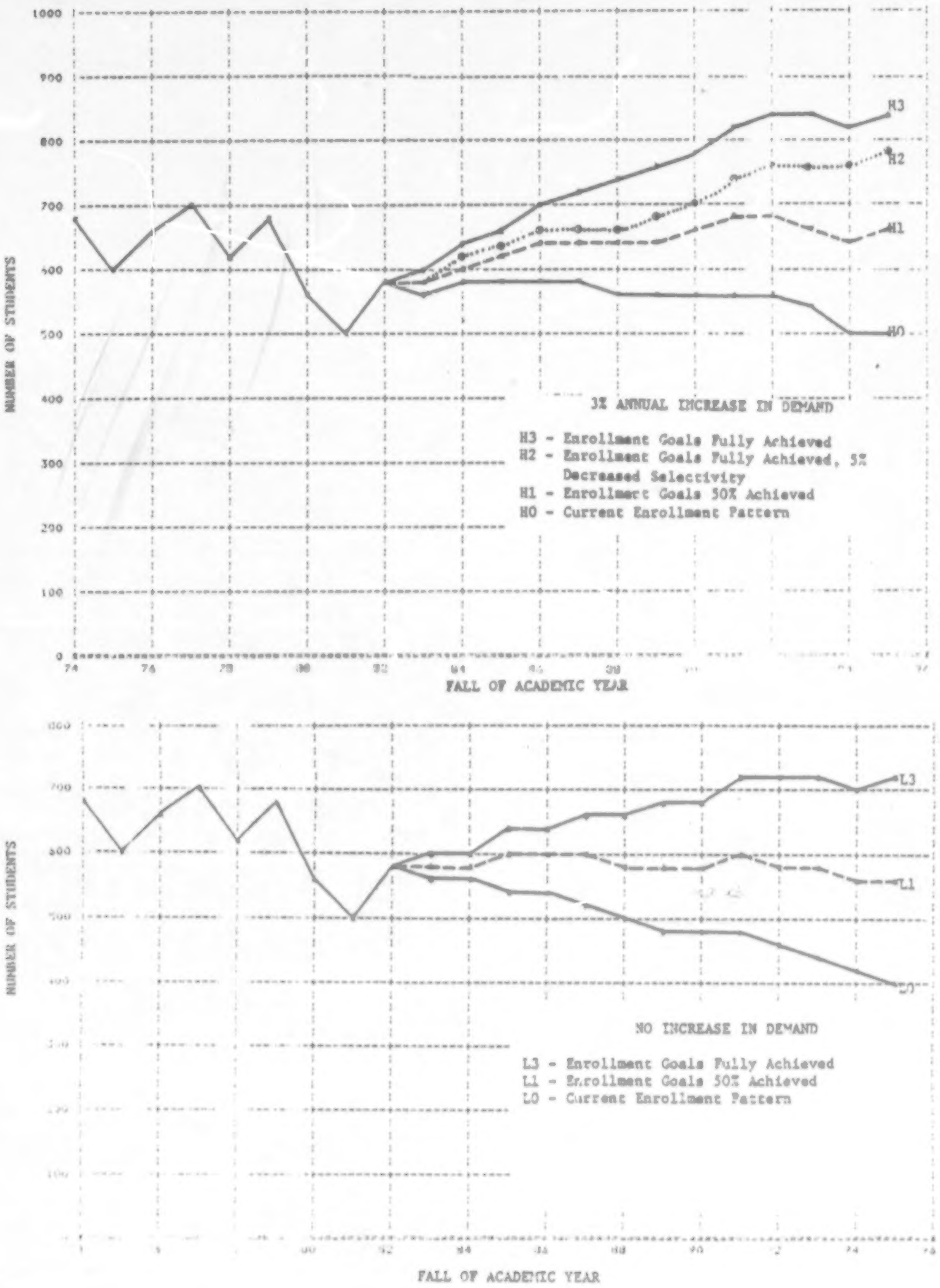


## PROJECTED NUMBERS OF FULL-TIME AND TOTAL FULL-TIME EQUIVALENT UNDERGRADUATES
### SHOWING EFFECTS OF ENROLLMENT GOALS FOR HIGH-DEMAND AND LOW-DEMAND CASES





## PROJECTED NUMBERS OF BACHELOR DEGREE GRADUATES
## SHOWING EFFECTS OF ENROLLMENT GOALS FOR HIGH-DEMAND AND LOW-DEMAND CASES



For the case in which medium demand is assumed, it is evident that the DHE goal of 3400 full-time undergraduates in 1985 can be met only if all goals are achieved and no improvement in selectivity is imposed. The 1990 goal of 3200 could be achieved if all goals are met even if increases in demand are somewhat less after 1985. On the other hand, the DHE projections of 3000 in 1985 and 2700 in 1990 are closely approached if the demand increases at 1.5 per cent per year, all goals are achieved, and some increase in selectivity is imposed.

If there is no fortuitious increase in demand, the strategic enrollment goals stated in this report will have to be substantially exceeded if the DHE enrollment goals are to be achieved.

In conclusion, NJIT is likely to maintain overall undergraduate enrollments at or slightly above present levels only if there is at least a modest (1.5 per cent annual) increase in demand for its programs. To do so, however, will require substantial additional effort to attract New Jersey students from outside the seven-county proximal region, out-of-state U.S. students, and foreign visa students. Included must be more women and ethnic minorities. Retention must be improved. Finally, new programs must continually be developed to meet the needs of a changing technological environment. As the new programs develop, the balance of the Institute's students will shift from the large majority in Engineering (currently 68 per cent of upper division full-time students), to some lower value that is difficult to estimate at this time (but is assumed to be 50 per cent in the projections presented here). However, in the methodology used for projection, such a shift has only a minor effect on total enrollments.

## 3.4 CERTIFICATE PROGRAM AND SUMMER SESSION

Not included in the preceding undergraduate projections are Division of Technology Certificate Program students and Summer Session enrollments.

The former group, all of whom are part-time evening students, has experienced a gradual decline in numbers, with Fall headcounts dropping from 611 in 1975 to 490 in 1978, then increasing to 539 in 1979. Enrollment is expected to stabilize in the fall of 1980 at about 180 full-time equivalent (FTE) students.

Summer Session, almost entirely undergraduate, is expected to continue at the increased level of about 266 FTE students experienced in 1979.

## 3.5 GRADUATE ENROLLMENT

### Masters Programs

Graduate enrollments are sensitive to economic factors, as well as demographics. The rate of hiring of engineers by industry influences directly Institute part-time graduate enrollments, and indirectly affects full-time enrollments.

Enrollment patterns in the MS programs showed a peak in 1974-75, with a decline following due to fewer graduates and lower industrial hiring rates. A small increase in new MS enrollments in 1977 suggests the beginning of a recovery as the engineering job market improves dramatically. New graduate programs, such as the impending Masters in Architecture, will also bolster enrollments. It would seem reasonable to project a steady-state Masters enrollment of 900-1000 in the ten years ahead.

The integrated B.S./M.S. being developed in engineering departments should also help to increase both undergraduate and graduate enrollments.

### Programs Beyond the MS

The degree of Engineer, a practice-oriented program that requires the equivalent of one year of full-time study beyond the MS, has attracted few students. However, the program requires few additional Institute resources, and it fills a need for study beyond the MS by employed engineers who wish to emphasize engineering practice and design, rather than to pursue the research-oriented doctorate. Enrollment probably will not exceed 10 students in the next six years.

Doctoral enrollments depend principally on available funding rather than number of applicants. They have shown a small decrease over the last six years, fluctuating between 50 and 60. In addition to the doctoral enrollment a significant fraction of the post-MS enrollment represents those awaiting admission to the doctoral program. There appears to be a slight decline in enrollments since 1974, but the Institute's growing research effort and the increasing use of teaching assistants for undergraduate laboratory instruction should bolster doctoral enrollments in the next six years. A steady-state enrollment of 60-100 can be projected, with a post-MS enrollment of 30-100.

## Full-Time Graduate Students

In the fall of 1977, only 13 per cent of all graduate students were full-time. However, three factors will serve to increase the proportion of full-time students:

1. The Masters of Architecture will add 15-25 full-time students.
2. The integrated BS/MS in engineering fields will attract some students full-time who might otherwise have pursued graduate work on a part-time basis.
3. The increasing funded-research effort will provide additional financial aid to support more full-time students.
4. Teaching assistants will be used where possible to staff undergraduate laboratory sections -- particularly freshman and sophomore laboratories in physics and chemistry.

While it is difficult to quantify the effects of the last three factors, it is anticipated that in the six years ahead full-time enrollment may range from the present level of about 150 to a maximum of 300.

## Projections of Institute Size

The projections of this chapter are assembled and tabulated on the following page. The range of values is from the case of medium (1.5% annual) increase in demand, with half of the enrollment goals achieved up to the medium demand case with all enrollment goals fully realized. The low demand and high-demand cases, although computed, are considered unlikely to be realized.

## PROJECTIONS OF INSTITUTE SIZE

| | 1980 | | 1985 | | 1990 | | 1995 | |
|---|---|---|---|---|---|---|---|---|
| | M1 | M3 | M1 | M3 | M1 | M3 | M1 | M3 |
| JUNIOR DIVISION | | | | | | | | |
| Full-Time[1] | 1725 | 1733 | 1699 | 1807 | 1615 | 1860 | 1532 | 1927 |
| Part-Time[1] | 462 | 464 | 455 | 483 | 434 | 499 | 410 | 514 |
| F.T.E. Students[2] | 1741 | 1748 | 1720 | 1829 | 1640 | 1885 | 1554 | 1947 |
| SENIOR DIVISION | | | | | | | | |
| Engineering | | | | | | | | |
| Full-Time | 718 | 718 | 814 | 866 | 810 | 931 | 747 | 947 |
| Part-Time | 291 | 291 | 326 | 346 | 324 | 372 | 299 | 379 |
| F.T.E. Students | 849 | 849 | 952 | 1012 | 847 | 1088 | 874 | 1108 |
| Engineering Technology | | | | | | | | |
| Full-Time | 118 | 118 | 143 | 165 | 148 | 195 | 147 | 219 |
| Part-Time | 221 | 229 | 267 | 314 | 276 | 369 | 274 | 412 |
| F.T.E. Students | 189 | 190 | 232 | 266 | 238 | 313 | 236 | 351 |
| Architecture | | | | | | | | |
| Full-Time | 132 | 132 | 183 | 178 | 216 | 210 | 238 | 230 |
| Part-Time | 28 | 28 | 39 | 38 | 46 | 45 | 50 | 49 |
| F.T.E. Students | 148 | 148 | 205 | 198 | 242 | 235 | 266 | 258 |
| "Other" | | | | | | | | |
| Full-Time | 115 | 115 | 162 | 187 | 191 | 244 | 210 | 293 |
| Part-Time | 62 | 62 | 81 | 94 | 96 | 123 | 106 | 147 |
| F.T.E. Students | 147 | 147 | 202 | 232 | 236 | 303 | 262 | 364 |
| Non-Matriculated | | | | | | | | |
| Full-Time | 38 | 38 | 38 | 43 | 38 | 48 | 38 | 53 |
| Part-Time | 261 | 261 | 261 | 295 | 261 | 329 | 261 | 364 |
| F.T.E. Students | 145 | 145 | 145 | 162 | 145 | 180 | 145 | 197 |
| D.O.T. Certificate Program | | | | | | | | |
| Part-Time | 500 | 550 | 500 | 550 | 500 | 550 | 500 | 550 |
| F.T.E. Students | 164 | 180 | 164 | 180 | 164 | 180 | 164 | 180 |
| SUBTOTALS, UNDERGRADUATE | | | | | | | | |
| FULL-TIME | 2846 | 2854 | 3039 | 3246 | 3018 | 3488 | 2912 | 3669 |
| PART-TIME | 1825 | 1885 | 1929 | 2120 | 1937 | 2287 | 1900 | 2415 |
| F.T.E. STUDENTS | 3382 | 3407 | 3620 | 3879 | 3612 | 4184 | 3501 | 4405 |
| Graduate | | | | | | | | |
| Full-Time | 104 | 112 | 115 | 128 | 126 | 144 | 137 | 160 |
| Part-Time | 936 | 950 | 949 | 965 | 962 | 980 | 975 | 995 |
| F.T.E. Students | 553 | 567 | 571 | 591 | 588 | 615 | 606 | 640 |
| Summer Sessions | | | | | | | | |
| F.T.E. Students[3] | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 |
| TOTALS | | | | | | | | |
| FULL-TIME[4] | 2950 | 2966 | 3154 | 3374 | 3144 | 3642 | 3049 | 3829 |
| PART-TIME | 2761 | 2835 | 2878 | 3085 | 2899 | 3267 | 2875 | 3410 |
| F.T.E. STUDENTS[5] | 4202 | 4240 | 4457 | 4736 | 4466 | 5065 | 4373 | 5311 |

[1] Fall headcounts

[2] Annual (Fall semester + Spring Semester)

[3] Total, Summer Session I + Summer Session II

[4] Headcount; excludes Summer Sessions

[5] Including Summer Sessions

# CHAPTER IV. PLANS FOR ATTRACTING AND RETAINING STUDENTS

## 4.1 INTRODUCTION

The quality and size of the student body is affected by many aspects of the Institute beyond its academic program offerings. Admission and retention policies, outreach and cooperation with other sectors of higher education, including liaison with secondary schools and county colleges, and student services at the Institute, are factors which will be discussed in this chapter.

## 4.2 UNDERGRADUATE ADMISSIONS POLICIES

### Selection

The undergraduate admissions policy of the Institute is designed to attract, select and enroll students for undergraduate study who are determined to be most likely able to complete their chosen programs.

All available information is used in making selections. Such information may include records of high school and/or college achievement, test scores, statements by the student and by others on his behalf, and other relevent information including significant work experience. In reviewing applicants for Engineering, Computer Science and Surveying, particular attention is paid to success achieved in mathematics and science subjects.

It is recognized that great differences exist in the potentials of applicants, differences which may be hidden beneath test scores and rank in class, and similar information. Thus, while previous academic performance and standardized test scores serve as primary guidelines, the admissions process includes a thorough study of each application. Factors such as motivation, differences in the degree of competition in high schools, the objective of increasing the numbers of students from under-represented groups, leadership and other personal qualities, are used to influence admissions decisions. These items are particularly useful when reviewing academically disadvantaged or handicapped students, those whose native tongue is not English, mature learners, and other sub-groups of applicants.

The Institute subscribes to a policy of rolling admissions and a Candidates' Reply Date of May 1 for full-time freshmen applicants. These policies insure that students will be considered in a timely and equitable fashion and will be able to consider all of their options. As a member of The National Association of College Admissions Officers and its affiliate, The New Jersey Associaiton of College Admissions Officers, The Institute subscribes to the "Principles of Good Practice in College Admissions and Recruitment" as set forth by these organizations.

Engineering and Computer Science applicants from reasonably competitive high schools with rank in the top three deciles of the class, and whose SAT Math scores are 550 or higher, fall into a readily acceptable category. In Architecture, the readily acceptable group also ranks in the top three deciles of its high school class and has combined SAT scores of 1050 or higher. The relatively small 'Man and Technology' and Bachelor of Science in Industrial Administration groups of applicants are processed similarly.

The Institute does not discriminate on the basis of sex, race, religion, national origin or handicap in any of its recruitment, selection, or other activities. The admissions process reflects the Institute's commitment to a program of affirmative action and compliance with Title IX.

## New Student Population

NJIT's admission policy recognizes the need to enroll greater numbers of out-of-area and out-of-state students as well as the need to increase the number of minority, women, handicapped, and other under-represented groups of students. Intensified recruiting efforts will be made in an attempt to attract such students. Caution must be exercised to enroll only those who can genuinely be expected to succeed. In order to assist the new student public to realize their potential, it is clear that the variety of academic support services must be reviewed and bolstered. This will benefit the more traditional students as well. To admit students on the basis of potential for success in college as gauged by non-traditional measures requires a special Institutional commitment.

## Transfer Students

The Institute has been able to offer acceptance to all transfer applicants for whom a reasonable chance of success could be predicted. Two-year colleges should be aided in attracting even more students to programs for which NJIT offers the final two years. Current transfer policies and procedures are such that they encourage transfer applicants, and no barriers of any consequence exist for such students.

## Planning

Through the Office of Vice President for Academic Affairs, the admissions process seeks to involve other members of the Institute community in determining the characteristics of the entering class through decisions dealing with entrance requirements, entering class size, program modifications, and similar information relative to the selection, assimilation and retention of students.

## Goals

For the foreseeable future it is intended that the traditional indicators of quality such as SAT and Achievement Test scores and previous high school and/or college achievement will remain nearly the same as at present. Every effort will be made to increase the quality of the incoming classes despite a general continuing decline in SAT scores in the State. Recruiting efforts have become quite substantial and are planned to become even more intense in the out-of-area and out-of-state sectors.

Housing, co-operative education, the addition of several new programs in the last few years, the demand for graduates from technological programs, new and improved recruiting literature, increased faculty support, and other improvements in recruiting will, it is hoped, permit NJIT to maintain or improve the quality of entering classes while maintaining or increasing enrollments. The decline in the number of graduating New Jersey high school seniors and the migration of families to areas from which commuting is difficult are important negative factors which new programs, housing, and the activities mentioned above will attempt to offset.

## 4.3 IMPROVING RETENTION OF UNDERGRADUATE STUDENTS

As an urban, state-supported institution, NJIT has a special mission to serve a broad cross-section of New Jersey citizens. At the same time, the Institute is more focused on education for the technological professions than any other public institution in the state. The rigor of its curriculums and the diversity of its student population create a unique challenge to the Institute. It is imperative that NJIT have an effective retention program to assure that every admitted student has a reasonable chance to complete successfully his or her studies.

Given this challenge, the Institute must be prepared to invest more resources in its retention efforts than might be typical at other public institutions. While a variety of retention efforts to date have produced a moderate success, a more coordinated and extensive program will be required to meet changing student needs.

The Education Opportunity Program (EOP) has been a pioneering retention effort at the Institute. The insights gained in this program for educationally and economically disadvantaged students have proved useful in providing successful experiences for other students. The recently completed CAUSE experiment (funded by the National Science Foundation) focused on improving retention of engineering freshmen. Elements of that program are being continued to aid retention along with other well-established efforts in freshman orientation, counseling, and tutoring.

All aspects of the NJIT community may have an impact on retention. The quality of teaching and availability of remedial courses have an obvious impact; more subtle are the convenience of transportation, on-campus residence facilities, and the ambiance of the campus.

A comprehensive retention program will require the coordinated efforts of faculty, administrators, and students, many of whom are already involved in current retention activities. Elements of a comprehensive retention program are presented in this section. It is drawn from a report submitted by a subcomittee of the Institute Long Range Planning Committee and contains a number of the specific recommendations.

## Retention Studies

The retention of college students has received considerable attention nationally.* However, very few of these national studies address the special problems faced by institutions focusing on rigorous technical and professional programs such as NJIT. Specific data concerning student attrition at the Institute are essential if the developing retention program is to meet student needs. Discussions within the Institute have identified a number of major causes of attrition, but little hard data are available to support these impresssions. The Dean of Students staff makes an effort to interview students who drop out. This has provided useful information, but limitations of staff time make it impossible to extend the effort to include all students who leave (for example, those who simply don't return after completing a semester).

At present, little formal structure exists to carry out attrition studies at NJIT. The Office of Institutional Research has begun collecting data and calculating descriptive statistics that best describe attrition at NJIT. A more formal study of attrition, to be made possible in part by a Student Information System being planned, would accomplish the following:

1. Identify, capture, and maintain data regarding students who leave the Institute as well as those who remain;
2. Provide information about dropouts that can aid the Institute in taking corrective action regarding curriculum, instruction, and student services;
3. Identify students who leave for reasons not amenable to corrective action;
4. Develop models to identify potential drop-outs, so that timely intervention can be taken.

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*For example, a list of 23 references, "College Student Retention," is available from the American College Testing Program.

A longitudinal study of each entering class for at least eight semesters would produce the quantitative data needed to define the attrition rate. All full-time, first-time freshmen could be identified upon admission; then each could be monitored each semester until graduation or termination. Data to be collected would include major field preference, grade point average, frequency of course withdrawals or failures, and exact termination date. Transfers within academic programs at NJIT could also be monitored. Such a longitudinal study would be a major undertaking; it should be carefully designed to assure that the data will be of maximum use when the study is completed and evaluated.

An operational data base and an on-going study of attrition can provide only quantitative data that may not fully describe attrition at NJIT. The student's reasons for withdrawal must also be determined. Such data could be gathered with a questionnaire and a formal exit interview. The administration of the interview and questionnaire could be the responsibility of the Dean of Students office, providing adequate staff time is available.

To be maximally useful, the exit interview/questionnaire should be completed by all students who drop out. A strong effort should be made to encourage all students to participate. The exit interview should also provide counseling and assistance to the student who makes the transition to another institution or employment. It could also be of help to the student who finds himself in a crisis situation.

It is further hoped that the Office of Institutional Research might be able to develop methods for identifying potential drop-outs. Institute resources could then be allocated to those who need them the most. In order to identify differences between students who are potential dropouts and those who continue to graduation, it will be necessary to study retained students as well.

> Recommendation II.1: The Office of Institutional Research and the Dean of Students should be given the responsibility and the staff needed to conduct continuing studies on attrition of undergraduate students.

## Remedial Courses

Fifteen years ago the Institute offered no remedial courses. All students took the standard freshman engineering curriculum, and most had adequate high school preparation to handle its rigors. For more than a decade, the Educational Opportunity Program, working with academic departments, developed remedial courses for its educationally and economically disadvantaged students. As the high school preparation of admitted freshmen began to decline, remedial courses were instituted in mathematics, physics, and English. Special instruction in writing was begun. The CAUSE experiment of 1976-79 further formalized and extended remedial course offerings. Current remedial courses are listed in Table 1 of Appendix G.

The most extensive remedial effort is that of the Educational Opportunity Program. It begins with an intensive 8-week summer program preceding the freshman year. The program for engineering students includes instruction in English, mathematics, physics, and chemistry. A similar program is available for Pre-Architecture students. Special sessions are devoted to study skills, problem solving, and motivation. About 90 per cent of the students who begin the summer program enroll in the fall semester. Their performance has been only marginally below that of non-EOP students despite much lower levels of high school preparation.

Despite the existence of remedial tracks in four basic core disciplines, 35 to 40 per cent of all freshmen have grade point averages below 2.00 ( A = 0) after one semester. This statistic echoes engineering attrition data nationally: more students drop out during or immediately after the freshman year than at any other time. The improvement of remedial programs may not significantly affect the attrition rate of well-prepared students, but it could help those whose preparation is inadequate.

> Recommendation II.1: A thorough study of retention/attrition data should include information on the entering credentials of those students who drop out.

Existing remedial programs are not now being evaluated outside the individual departments as to their effectiveness in retaining students by preparing them for the rigors of the regular curriculum. Grades earned by "alumni" of remedial sequences could be compared to grades of regular students in subsequent courses. The use of common final examinations is another mechanism by which the effect of remedial courses could be measured.

Recommendation III.1: Remedial courses and remedial sequences should be assessed on a regular basis by those charged with the responsibility of overseeing the retention effort.

The single most important element in a successful remedial program is concerned, innovative teaching. The remedial-level student has special characteristics with needs not always met by conventional teaching methods. Lecturing on theory, for example, is far less effective than using class time to illustrate specific applications and allowing students to induce the theoretical generalization. New approaches to classroom instruction require both time and enthusiasm from teachers. Faculty should be encouraged to accept and welcome assignment to remedial courses. Selection of intructors must be made with an eye toward the special qualities characteristic of good teaching.

Recommendation III.2: Released time should be made available to teachers willing to devise new classroom techniques for use in remedial courses; effective teaching in remedial courses should be considered in the promotion/tenure process.

The success of the EOP summer program testifies to its value in helping underprepared students adjust to the demands and pressures of NJIT curricula. A similar summer program could benefit other entering freshmen, as for example, those who are conditionally admitted. This group could be required to take a summer program, while other freshmen could elect it. The costs could be at least partially covered by tuition.

Recommendation III.3: The Institute should offer a summer program similar to EOP for other students whose academic backgrounds indicate a need for extensive preparation for college work.

The New Jersey Department of Higher Education is becoming increasingly concerned with basic skills programs for admitted students whose test results indicate a need for remediation. In response to this concern, the Humanities Department is organizing a Language Learning Center (for reading and writing). Although NJIT freshmen score relatively well on the basic skills examinations, the rigors of the NJIT curricula demand even better preparation.

Recommendation III.5: The Institute should seek the special State funding available for basic skills, and should report its progress to the Basic Skills Council.

Placement of Students

The wide variety of regular and remedial courses available to freshmen require a careful system of placement of students into these courses. Students come to NJIT with a diversity of aptitudes, achievements, motivations, and prioritities. Helping students to meet their individual needs is important in any retention effort.

The Institute has responded to the varied backgrounds of students with courses ranging from honors to remediation. At present, every first-time freshman is evaluated and placed in English, mathematics, and science courses appropriate to the student's background. Specific formulae have been developed to place students, and the accuracy of placements has been demonstrated. Some placements are mandatory (as in English), while others are recommendations (as in mathematics). The number of students who opt not to follow these recommmendations is so small that the advisory system seems to be working in most cases.

Recommendation IV.1: The course placement system should be continued, with the question of whether placement should be mandatory or advisory left to the discretion of the department offering the courses, with an appeals procedure available.

The present system of course placement was established by estimating the number of students that could reasonably be placed in remedial courses and determining cut-off scores that seem to produce the desired number. While this process may be convenient in estimating the number of sections needed, a more appropriate approach would involve determination by the faculty of the skills a student should possess (i.e., a criterion-referenced process). These criteria could be graded from the remedial to the honors level.

Recommendation IV.2: Criterion-referenced standards should be established for placement of students in remedial, standard, and honors courses.

Course placement based on test scores alone is an inexact science. Other factors should be considered, such as a student's interest in a lightened course load or slower paced courses, part-time employment, commuting concerns, or extra-curricular activities. To meet these individual needs, course placement objectives should be explained to groups of entering students, or on an individual basis where necessary. Each student should have an opportunity to discuss recommended placement and to appeal manadatory placement.

Recommendation IV.3: The placement process should not strictly be based on test scores. Other factors should be considered, and the student should play a role in placement.

The Institute has a carefully developed system to advise students who transfer from other institutions. It is generally effective, although it cannot always be implemented for transfers admitted at the last minute. Acceptance of credit for courses taken elsewhere (with grade of "C" or better) is usually accomplished without a detailed assessment of equivalence of courses. As a result, some students find themselves experiencing difficulties in courses for which they presumably had taken the prerequisites else where. What is needed is more extensive evaluation of transfer students, to provide an improved basis for advisement on course selection, as well as for followup to monitor student progress.

Recommendation IV.4: Testing, advisement, and course placement of transfer students should be upgraded. Services provided to students should be made available during the evening session.

## Counseling

Counseling and advisement play essential roles in student retention, yet the Institute has not always been able to devote sufficient resources to these key elements. The distinction between counseling and advisement is not always clear-cut. Counseling often connotes the involvement of personnel professionally trained in the field, but can also include peer counseling. Advisement typically suggests a faculty role with emphasis on curricular requirements. These functions sometimes overlap. Advisers and counselors, understanding their respective roles and limitations, should combine their efforts in the interest of increasing the students' total development.

The Counseling Center provides educational, career, and personal adjustment counseling to NJIT students. These are persons, usually self-referred, who seek help for a wide variety of concerns including career choice, academic difficulty, and psychological problems.

The Counseling Center is involved in a number of activities that impinge directly on the retention effort, as well as activities in other areas. Of particular relevance to an expanded retention program are the following:

Career Counseling includes testing and discussions to determine interests, aptitude, values, and priorities, with the ultimate objective of making a career choice. Given NJIT's relatively narrow range of academic programs, career counseling takes on a special importance, as it may very well involve a student's transferring to an institution more appropriate to the students objectives.

EOP Counseling is an activity that involves both the Counseling Center and Educational Opportunity Program staff. The educationally and economically disadvantaged students in the EOP Program have a special need for a variety of counseling, beginning with their pre-freshman summer program.

Peer Counseling involves students providing services to other students. Counseling staff is involved in the training and supervision of peer counselors, who operate the stop-in center in the Campus Center.

Probationary Student Counseling requires that every first semester freshman experiencing poor academic performance must see a counselor before registering for a second semester. Many second semester freshmen in the same position must also see a counselor.

Conditional Admit Counseling focuses on students who were admitted on the condition that they follow a prescribed course of study and tutoring to make up for deficiencies in their backgrounds.

Crisis Intervention involves students with urgent personal problems that may lead to a suicide attempt, psychotic break, or other extreme behavior.

Placement of Students, described in the previous section, employs the expertise of the Counseling staff in a number of ways, including formulation of examinations, interpretation of results, and discussions with students who question their placement.

The Counseling Center staff also serves in an advisory and training capacity in a variety of areas, ranging from training of faculty advisors to assessment of applicants for security positions. It is likely that the work of the Counseling Center will grow as the retention effort develops, the student population grows further in diversity, and the needs of dormitory students become evident.

Recommendation V.1: The Counseling Center staff should be expanded to meet urgent current needs and to provide essential professional expertise in an expanded retention effort.

## Advisement

Advisement of students by faculty should be an important part of a comprehensive retention effort. The School of Architecture, the Computer and Information Sciences Department, the Department of Organizational and Social Sciences, and the "Man and Technology" program all have systems of faculty advisement starting with the freshman year. The Engineering Departments assign faculty advisers to students as they enter their sophomore year. A new system of advisement of engineering freshmen was instituted in Fall, 1979.

Faculty advisement typically focuses on curricular and occupational matters, as well as a student's academic progress. Particularly in the freshman year, problems of adjustment to college come to the fore. Freshman advisers must be especially sensitive to a student's doubts as to ability and objectives. Where appropriate, a faculty member may choose to refer a student to the Counseling Center for professional assistance.

In spite of faculty efforts to date, it is not at all clear that present systems of faculty advisement are meeting student needs. Many students do not perceive a need for advisement by faculty; they may be reluctant to discuss problems with someone who may be judging their academic performance Faculty may not be available when students drop by for advice.

Advisement during the freshman year is perhaps most crucial to retention, as students then face the most difficult problems of adjustment. The freshman advisory program developed during the CAUSE experiment might serve as a model for improving freshman advising. The following conclusions were drawn from that experience:

(a) Many students need advising for a wide variety of reasons.

(b) Students often need someone with whom to talk, although they would not ordinarily turn to a faculty member.

(c) Students who most need help are often least likely to seek it.

(d) Advisers need to be intrusive; they cannot sit back and wait for students to come to them.

(e) A faculty member need not be in the field of the freshman's academic major, but it is more effective when an advisor is also one of the student's instructors.

(f) It is essential to have a comprehensive training program for faculty advisers, including follow-up sessions with feedback from students.

(g) Whenever a student is having difficulty with his course work, the teacher should inform the student's advisor. Such notification should reach the adviser as soon as possible, in order that he may intervene effectively with the student.

At the present time, the entire freshman engineering class has been assigned to advisement by 35 faculty volunteers from most academic departments. The system is coordinated by the Assistant to the Dean of Engineering, with assistance from the Counseling Center. The Center provided an all-day training workshop prior to the beginning of the Fall, 1979, semester for those faculty who had volunteered to be advisers. Although it is too early to assess the outcomes of this new advisement effort, the conclusions reached by the CAUSE experiment would seem to be confirmed. Freshmen do not often seek out their advisers. Those who need help the most are often the least likely to seek it.

> Recommendation V.2: A system of mandatory advisement should be established for all freshmen. As a minimum, all freshmen would see their advisers at the beginning of the Fall semester, and before pre-registration for the following two semesters. Advisers' signatures would be required to validate student registration forms.

Transfer students need careful advice on curricular requirements before their initial registration. The present system directs them to a faculty member, but not all students avail themselves of this service.

> Recommendation V.3: Upon their first registration, all transfer students, before they can complete registration, must have the signature of a faculty member authorized to advise transfer students.

There are other groups of students who could benefit from mandatory advisement, e.g., those on probation and those readmitted after academic suspension.

> Recommendation V.4: All students readmitted after academic suspension and all students on academic probation should have the signature of their faculty adviser on their registration form before it is submitted.

Coordination of an effective freshman advising system will require substantial time. Given other demands on faculty time, this could best be accomplished by an administrator who is provided with sufficient time.

Emphasis should be placed upon improvemnet of the present system of faculty advisement for freshmen. Academic departments should also be encouraged to improve advisement of sophomores, because this is another point crucial to retention.

## Alternative Paths to a Degree

As only a fraction of full-time NJIT students complete a four-year degree program in the prescribed time, it is highly desirable to provide advice on alternative paths to a degree. Five year courses of study could be formally outlined for the student who starts in several remedial courses or for the student who simply wishes to proceed at a slower pace. Developing formal alternatives and making them available to freshmen as well as transfer students should improve retention.

> Recommendation V.5: To accommodate students who are not prepared to finish a degree program in the time prescribed in the catalog, formal alternative extended programs should be established.

## Tutoring

Student retention can be improved by providing assistance in learning course material outside the classroom. Many students seek out their instructors for special help, and the teaching staff willingly provides assistance within the time available. Students who need ongoing assistance should have access to such help through tutoring or learning centers. Tutoring involves one-to-one or group assistance by an upperclassman or graduate student. A learning center provides assistance using instructional technology.

The Educational Opportunity Program has a well-established and effective tutoring program for its students. Tutoring services available to other students are limited and uncoordinated. To have significant impact on retention, tutoring should be available to all freshmen and sophomores. Such an expansion of effort will require substantial funding for additional tutors and supervisors. Because of EOP's record of success in tutoring, it could provide the focus of an expanded tutoring program available to all students.

Recommendation VI.1: The Educational Opportunity Program should be assigned the responsibility for extending its present tutoring program to all freshmen and sophomores, with necessary funding provided.

If tutoring is to be extended to many more students, additional tutors will be needed. Hence, tutoring must be made attractive to upperclassmen and graduate students. The criterion of a grade of B by the tutor in the course to be tutored should be maintained, but this limits the pool of available tutors. To assure adequate preparation, tutors should be paid for preparation time.

Recommendation VI.2: The position of tutor should be made attractive and effective by adequate compensation, including payment for preparation time.

To be effective, tutoring should be mandatory for some students. Individual academic departments should set their own standards. The fact that common examinations are given in some courses facilitates the tutoring effort. For example, the Chemistry Division and the Computer and Information Science Department give common examinations in Freshman courses, so that students failing examinations in these courses could be required to attend tutoring sessions until they improve their performance. Mandatory tutoring could not be instituted until the expanded EOP tutoring effort is ready to handle substantially larger numbers of students.

As the tutoring program expands it will need dedicated space in a central location. Such space could also include the Learning Center. The Educational Opportunity Program would work closely with academic departments in determining the variety and extent of tutoring that should be available for each course. In some instances, the special nature of the expertise needed may require that faculty be directly involved in an effort that is retained within the department. A current example is the special instruction in writing provided to students in freshman English and Humanities.

## Learning Center

A learning center is currently in full operation in freshman Chemistry courses. Lessons are scheduled and are mandatory for students who receive grades of less than B on common examinations. Learning centers are in various stages of development in Humanities, Physics, and Electrical Engineering.

The purpose of a learning center is to provide students (especially weaker students) with drill work, alternative explanations, and supplementary material intended to improve motivation. Many students in the electronic age learn better using two senses rather than one. Learning centers are therefore potentially an important component in a retention effort.

A learning center can be considered as a form of tutoring, so that it could be housed and administered with the tutoring program. Although individual learning centers are developing at various locations, it would appear to more effective and efficient to have a single centralized facility. Students would then clearly identify the location where help is available.

Recommendation VI.3: A centralized learning center should be developed to include traditional tutoring, as well as appropriate instructional technology.

Until adequate centralized space is available, individual departments should be encouraged to develop and test material appropriate for use in a learning center. Very little material appropriate to use in learning centers is available commercially, so that considerable faculty time must be devoted to the effort. For example, the Chemistry Learning Center was developed with time provided by the CAUSE experiment.

Recommendation VI.4: Released time for Educational Development and funding for necessary equipment should be provided to departments with carefully developed plans for learning centers.

## Teaching Methods

There is presently no formal office within the Institute to assist faculty to deal with evolving educational methods and ideas. To address this need, the Committee on Learning Resources could be given an expanded mission and membership. Greater weight could be given contributions to teaching effectiveness in promotion and tenure considerations. The Committee would include in its charge the sponsorship of an on-going workshop in teaching methodology. Such workshops might address topics such as cognitive learning, print and non-print media, computer-aided instruction, and special techniques in remedial courses. Participation in the workshop would be strongly encouraged, especially for new faculty members, instructors in developmental courses, and teaching assistants.

> Recommendation VII.1: The Committee on Learning Resources should be expanded and charged with the responsibility for disseminating ideas and techniques for improving teaching.

The individual academic departments must assume a greater role in improving teaching methods, especially in freshman courses. Freshmen have considerable difficulty adjusting to college life and suffer the highest attrition rate. Therefore, they deserve greater attention. The high failure and drop rate in the freshman year would suggest an urgent need for review of teaching methods in freshman courses.

Improving teaching methods so as to increase retention requires a substantial faculty commitment.

## Administration of a Comprehensive Retention Program

The development and maintenance of a successful retention effort will require the commitment of substantial faculty and staff time, as well as other Institute resources. While many faculty and staff are already involved in various efforts that could be incorporated into a comprehensive retention program, a much greater time commitment will be needed if the effort is to be successful. Given the complexity of the task, it is likely that this commitment would be for the indefinite future.

It is recommended that an administrator be assigned the responsibility of coordinating and implementing the retention program as a matter of high institutional priority. A broadly-representative Retention Council can be most helpful in assisting the administrator with this charge.

As it is basically an academic effort, the comprehensive retention effort should be under the general responsibilities of the Vice President for Academic Affairss. The Coordinator should report to the Vice President and serve as chairman of the Retention Council.

The Retention Coordinator would be responsible for the overall effectiveness of the retention program. Because the Coordinator would be working closely with diverse elements of the Institute community, the person holding the position should have the credentials and experience necessary to gain the respect and confidence of the community. This position must be one of leadership, not administrative assistance.

Implementation

A a comprehensive retention program will clearly require a major commitment of resources. To provide time for adequate planning and testing of new retention initiatives, the comprehensive effort might be phased in over a three-year period. This time frame will also allow time for seeking of funds necessary to implement the program, from State or other sources.

The staged development of the comprehensive retention effort will also allow time for the appropriate administrative structure to emerge. Existing offices can be assigned responsibility for elements of the comprehensive retention program, with appropriate additions of professional staff time. The Retention Council could be formed immediately with a chairperson selected from among administrators. Hence the decision on a full-time Retention Coordiator could be delayed for a year or two, until the magnitude of the administrative tasks evolves to the point where such a decision can be justified.

In the first year, the most urgent tasks would be undertaken, e.g., improvement of freshman advising and establishment of a tutoring center.

In the course of three years, all recommendations given earlier could be addressed.

A three-year phase-in might be patterned as shown in Appendix G. Although there are many urgent needs, staging can allow for planning and funding.

This three-year start-up period will move the Institute a long way toward a comprehensive retention program, but a continuing effort will be needed. Not all goals will be attained in the start-up period.

## 4.4 STUDENT SERVICES

### Mission Statement for Student Services

The mission of the Student Services Division is to be sensitive to and assist in areas related to students' educational, emotional and physical well-being, and to encourage their intellectual, cultural, and social development. The Division attempts to achieve its overall goal by designing and implementing programs which will provide the essential services and conveniences necessary for students. The goals of such services are to: (1) improve the students' academic effectiveness, (2) stimulate their emotional, cultural, physical, social and career development and (3) improve quality and increase retention of the student body.

The Institute has developed from an engineering college to a modern technological university and so, too, the student body has changed and is changing from a predominantly white male population to an enrollment that includes an increasing number of women, minority, and foreign students. Following a long gradual decline in the number of evening part-time students, a reversal has now occurred and the evening part-time enrollment is expected to increase for the forseeable future.

The Institute's first residence hall is the initial step in a long-range plan to increase the Institute's geographical outreach. This is in conformity with recommendations of the state Department of Higher Education and the Task Force on Boundaries for Admissions Policies that NJIT should move toward 15 per cent out-of-state full-time freshmen, and to provide housing for New Jersey students living beyond commuting range of the Newark campus.

These changing enrollment patterns necessitate changes in the Student Services Division, as well as in other areas of the Institute. In the decade ahead, Student Services can and must play an essential part in the total education of NJIT's students.

Therefore, the future role of Student Services in the Institute should include:

1. Increased individual services (e.g., financial aid, counseling, and placement), particularly for women, minority students, handicapped students, foreign students, evening and part-time students and those living on or near the campus.
2. Increased emphasis on consultation and outreach services, while assisting in upgrading academic standards (e.g., course placement, teaching effectiveness, financial aid information, remedial and basic skills programs, testing, group conflict resolution, personnel evaluation, career planning, alcoholism).
3. Expanded retention focus to include all students (transfer, upper-classmen, and graduate students, as well as freshmen). This also embraces the goal of an integrated and comprehensive orientation and tutoring program, as discussed in Section 4.3.
4. Extensive investigation into the feasibility and possible organization of a weekend college.
5. Significantly increased residence hall facilities on campus and a coordination of off-campus housing to effect an integrated residence program. Future housing will consider living quarters for full-time graduate students, whose numbers would be sufficient to support the Institute's graduate and research programs.

6. Increased emphasis on developmental programs (e.g., relating to authority figures, sexuality, decision-making, responsibility, dependence-independence).

7. Increased emphasis on, and broadening of student research including such topics as students' backgrounds, needs identification, program evaluation, and employment surveys.

8. Increased use of technology (e.g., microfilm, audio-visual equipment, and computer facilities).

9. The exploration of resources and the development of proposals for additional funding from private and industrial donors.

10. Increased emphasis on training (faculty advisers, resident advisers, peer counselors, student leaders).

11. Improved facilites for athletic programs including the implementation of Title IX legislation.

12. A projected decrease in the need for Veterans' services. Currently NJIT has over 300 veterans receiving benefits and the expectation is that these benefits will continue through 1984.

13. A broadened staff training and development program. The professional competence and continued growth of the Student Services personnel will have a direct and positive impact on the student body and on the Institute.

These goals will be implemented through the offices of the Division of Student Services which are listed below:

1. Counseling Center
2. Foreign Student Office
3. Financial Aid Office
4. Division of Health, Physical Education and Athletics
5. Placement Office
6. Student Activities Office and the Student Center
7. Veterans' Affairs Office
8. Residence Life Office
9. Evening Students' Office

## 4.5 EXTENSION PROGRAMS

### The Need for Extension Programs

In order to make Institute programs more readily available to various audiences within the State, New Jersey Institute of Technology has taken the initial steps to offer programs at sites other than its Newark campus.

That NJIT should offer programs in the southern part of New Jersey is the logical development of previous planning of both the Department of Higher Education and the Institute. During the past two decades, there has been a pronounced shift of population and industry from northern to central and southern New Jersey. Today, more that half of the population lives in the central and southern parts. Much of the educational capacity, on the other hand, is concentrated in the northern part of the State. To meet this southward shift of population and industry, several educational institutions, in both the public and private sectors (including NJIT), have responded by offering programs to specific audiences.

That there is a need for technological programs in the southern part of New Jersey is evidenced by the fact that since the beginning of calendar 1980, representatives of six different industrial or governmental agencies have approached NJIT requesting that it offer programs on or near their facilities. Institute faculty and administation, after determing that the Institute could and should offer the needed programs, approached the staff of the Department of Higher Education to be assured of the accuracy of NJIT's interpretation of the State Master Plan and to discuss further steps to be taken. Institute personnel not only received support, but strong encouragement to continue exploring the potential benefits of the extension programs. Many meetings were held involving representatives of the corporate sector, governmental agencies and colleges and universities. These meetings persuaded the Institute administration that academically sound programs of the highest quality could be developed and that it should proceed with program development.

### Types of Programs To Be Offered

In order to satisfy these needs more adequately, NJIT plans to develop several selected off-campus programs over the next several years on the existing campuses of two year and four year colleges, and at selected corporate and governmental sites, with appropriate central administrative direction and support.

The Institute's response to these opportunities is not only in consonance with previous planning of the Institute and the State Draft Master Plan, but represents a new and important approach to inter-institutional cooperation in New Jersey wherein a university:

a. Plans with a community college to offer a baccalaureate program on site, closely articulated with the two year program to facilitate additional opportunities for graduates of the community college and others within the region.

b. Plans with a four-year college to offer a graduate program in disciplines outside the mission of that college, but which articulates with a baccalaureate program, thus offering additional opportunities for its graduates and others within the region.

c. Plans with a Federal research center to make use of unique research and educational facilities to provide opportunities in a field of growing national concern and importance.

## Administration of Extension Programs

In order to assure the high quality of these programs an administrative structure, specifically designed to deal with the special problems of extension programs, must be implemented.

During the summer of 1980 an Assistant Vice President for Extension Programs was added to the office of the Vice President for Academic Affairs. This administrator will be responsible for assuring program quality, logistical support, and coordination. Once programs have been announced, there will be a program director for each program at each site. The site program director will be an associate chairperson of the department offering the degree program, answering directly to the department chairperson at Newark.

The Director of Extension Programs will be responsible for overall negotiations with the administration of the host campus (or with a corporate or governmental representative, as appropriate). The departmental program director will be responsible for the supervision of the faculty teaching in the program, for augmenting the library collection, for laboratory facilities for the program, and for assuring that the faculty regard themselves and are regarded the same as comparable Institute faculty.

As the programs expand, additional full-time faculty will be engaged with a clear understanding that the bulk of their instructional load will be associated with teaching at a remote site, in order to maintain an appropriate balance between full and part-time faculty. Such full-time faculty will be required to teach, to serve on committees, to perform research and, in other ways, participate in the activities of the Institute.

## Implementation

Starting in the fall of 1980, the Institute plans to offer courses in Computer and Information Sciences, within the Bachelor of Science degree program, on the campus of Camden County College or at a nearby site. Courses within the Bachelor of Science in Engineering Technology program are planned to be offered at Camden County College (Electrical and Mechanical Engineering Technology) and Mercer County Community College (Construction and Manufacuring Engineering Technology). In addition, it is planned to offer courses within the Master of Science in Industrial and Management Engineering program at the Federal Aviation Authority Technical Center (near Stockton State College) and at the U.S. Army Armament Research and Development Command. The library, computer, and laboratory facilities at each of these locations have been evaluated and have been determined to be adequate for the planned course work.

These programs have been given strong support by the academic departments at NJIT. The general off-campus thrust will be the subject of further discussion, as the programs cited above evolve.

# CHAPTER V. PLANS FOR ACADEMIC PROGRAM DEVELOPMENT

## 5.1 INTRODUCTION

In order for NJIT to fulfill its mission as a technological university in a rapidly changing milieu, the Institute must be alert for needs and opportunities for the introduction of new academic degree programs, both to replace existing programs for which demand slackens and to augment the complement of programs to encompass emerging areas within the overall mission.

The Institute considers the offering of new academic programs as a critically important aspect in attracting students to the technological professions. Another aspect, geographic outreach, was discussed in the preceding chapter. The concomitant endeavor of formulating new academic programs requires the identification of areas of emerging technological needs for which the appropriate education is not currently available but is in demand. Many of these needs can be perceived only after the first stages of planning are undertaken -- including a market survey and a determination that the need is not adequately met by other educational institutions.

## 5.2 PLANS FOR NEW ACADEMIC PROGRAMS

A matching of perceived needs for new degree programs with the expertise and resources available at the Institute has led to the proposal of a considerable number of degree offerings to be considered in the coming decade. The list which follows is divided into those programs which should be planned for offering in the near future (within three years), and those to be planned for the longer term (more than three years hence).

Programs in the list vary in stage of development from those for which planning is far advanced to others which at this time are little more than areas suggested for preliminary study. A brief description of the more advanced plans follows.

### Proposed Programs in Architectural Areas

The New Jersey School of Architecture (NJSOA) is developing four new programs -- two graduate and two undergraduate -- as well as a Minor in Architecture and a Minor in Architectural Studies for undergraduates who have an interest in architecture but have their major commitment in another field. Recent U.S. Department of Labor Statistics indicate that the need for

## NEW ACADEMIC PROGRAM AREAS UNDER CONSIDERATION

### SHORT TERM

Undergraduate:

- Actuarial Science (Math)
- Applied Chemistry (Ch.E., Chem.)
- Plastics Engineering (M.E.)
- Industrial Design (Arch., I.M.E.)
- Plant Engineering Technology (I.M.E.)
- Industrial Hygiene Technology (I.M.E.)
- Plastics Technology (M.E.)
- Communications Technology (E.E.)
- Nuclear Science (Physics)
- Urban Planning (Arch., C.En.E., O.S.S., Rutgers)
- Computer Engineering (E.E., C.I.S.)
- Architectural Studies (Arch.)

Graduate:

- M.S. in Architectural Studies (Arch.)
- Master of Architecture (Arch.)
- Master's Program in Energy Systems (Interdisciplinary)
- Master's program in Toxicology (Interdisciplinary)
- Doctoral Program in Industrial Engineering with focus on Engineering Psychology (Interdisciplinary)

Programs at both undergraduate and graduate levels:

- Environmental Engineering with Concentration in Toxicology (Interdisciplinary)

### LONGER TERM

Undergraduate:

- Applied Mathematics (Math)
- Applied Physics (Physics)
- Nuclear Engineering (Physics)
- Computer Engineering (E.E., C.I.S.)
- Industrial Health & Safety (I.M.E., Ch.E.)
- Materials Science (Physics)
- Transportation Technology (C.En.E.)
- Structural Technology (C.En.E., Arch.)
- Engineering Geology (C.En.E.)

Graduate:

- Masters Program in Biomedical Engineering (Interdisciplinary)
- Doctoral Program in Computer Science (C.I.S.)
- Doctoral Program in Management Engineering (I.M.E.)
- Doctoral Program in Organizational Science (O.S.S.)
- Masters Program in Engineering Technology (Interdisciplinary)
- Masters Program in Surveying (C.En.E.)
- Masters Program in Environmental Health (C.En.E.)

architects is likely to increase at more than the average rate over the next decade. Furthermore, a large increase is projected for architecturally related personnel, particularly in the areas of energy-retrofit, in the growth of housing stock, and in the rebuilding of the urban infrastructure. Projected demand for architecturally related professionals with highly developed technical skills is strong.

## Bachelor of Science in Architectural Studies

The purpose of this program is to prepare students for positions in architecturally related areas that do not rely heavily on design skills and which bring to bear the related technologies of the Institute. There is an increase in the number of career opportunities in government agencies, in research organizations and in corporations which deal with manufacturing and distribution of building materials (a large sector of the economy), but in which an Architect's license is not required.

The Educational Development Plan of the NJSOA, reflecting the Institute's Master Plan, identified the development of a four year (non-professional) program to complement the professional Bachelor of Architecture program as soon as the latter became fully operational.

The curriculum in Architectural Studies will be, in fact, a four-year subset of the Bachelor of Architecture curriculum, following completely the curriculum created for the first three years of that program. The differences occur in the final year where the students develop "areas of concentration" in technical areas rather than completing the present architectural design sequence.

In the first year of operation projected enrollment entering the third year of the program is projected at 50 students, and is expected to remain at approximately that level through the fifth year of the operation of the program.

## Bachelor of Science in Industrial Design

Industrial Design is a profession concerned with bringing about a sense of order and beauty to the products of technology with additional concerns for the safety, comfort and aesthetic satisfaction of users. The industrial designer's activities may extend to the areas of product design, packaging, graphics, display, company identification, transportation, furniture, and communications equipment.

The concept of an Industrial Design Program in a technological university involves the synthesis of existing programmatic elements within existing departments around a core of design studios. The proposed program in Industrial Design will be a five year course of study leading to the degree Bachelor of Science in Industrial Design.

The purpose of this program is to prepare students for entry-level positions in a design consultant office or on the design staff of a corporation, and for graduate study. Designers recently, however, have been finding greater employment opportunities with government agencies, research organizations, corporate product planning offices and various other activities. Recent U.S. Department of Labor statistics indicate the need for industrial designers is likely to increase at greater than the average rate over the next decade. Projected demand for designers in industrially active New Jersey is strong.

Students will be drawn from the Introductory Program of the School of Architecture as well as through articulation with other programs throughout the State offering appropriate introductory courses. Projected enrollment in the first year of operation is 15 second year students. This enrollment is expected to rise to 60 in the fifth year of operation.

## Graduate Architecture Programs

The 1980 Statewide Plan for Higher Education refers to "Newark Institutions" (serving Northern New Jersey, the most populous part of the State) as a logical location for a major graduate center offering programs in urban-oriented and professional studies as well as using graduate education as a means of updating professional knowledge. The Educational Development Plan of the NJSOA, reflecting the Institute's Master Plan, projected the development of a graduate degree program when the undergraduate program became operational.

## Master of Architecture

The purpose of this program is to provide opportunities for advanced study in architectural design. Emphasis will be placed on utilizing present resources to develop a program suited to the students needs and interests.

The complexities of contemporary society continue to produce problems requiring education for the development of specialized skills. As there are no State-supported programs in New Jersey, the proposed degree programs are deemed necessary to fulfill the demands for greater specialization among architects, for graduate level education for those in architecturally related areas, on a graduate level and for preparation of the specialized consultant equipped to undertake collaborative work in a multidisciplinary environment.

The Master of Architecture can provide programs for students from a variety of undergraduate schools, thus enriching the undergraduate program by providing it with graduate assistants in the studio. In addition, the intent is to utilize the resources of the College of Medicine and Dentistry of N.J., NJIT and Rutgers-Newark, where students may gain specialized knowledge and skills appropriate to their program.

## Master of Science in Architectural Studies

The objective of this program is to provide opportunities for advanced study in a variety of specializations (e.g. structural design, historic preservation, alternate energy systems, industrialization, business administration, environmental psychology, construction management, computer-aided design). Emphasis will be placed on utilizing interdisciplinary resources which permit programs suited to the student's individual needs and interests.

The Master of Science in Architectural Studies program combines the study and practice of shaping the "built environment" with research on the nature of the process itself. It stresses intellectual inquiry into the built environment and the manner in which it can be improved. The program is designed for 1) students with a first professional degree in architecure, 2) students from other backgrounds who wish to learn more about the built environment in collaboration with architects, or students with an interest in environmental psychology, urban history, the economics of housing, or building technology, or 3) students who have completed a Bachelor of Science in Architectural Studies.

As an interdisciplinary degree, the Master of Science in Architectural Studies can provide programs for students from a variety of undergraduate disciplines, thus providing potential linkages with many other institutions of higher learning. In addition, as for the Master of Architecture program, the intent is to utilize the resources of the College of Medicine & Dentistry of N.J., NJIT and Rutgers-Newark, where students may gain specialized knowledge and skills appropriate to their program.

## Bachelor of Science in Actuarial Science

The Department of Mathematics has developed plans to offer an undergraduate program in Actuarial Science. The large number of insurance companies in Newark and the surrounding area, assures a continuing demand for college graduates with preparation in the actuarial area.

The proposed four-year academic program is designed for persons who are high school graduates with a strong background and strong interest in mathematics of an applied nature. The curriculum includes an emphasis in the industrial management and computer and information science areas.

Eight new required courses in mathematics are proposed for the curriculum:

| | |
|---|---|
| Math 142 | Exploratory Data Analysis |
| Math 224 | Differential and Difference Equations |
| Math 242 | Introduction to Statistics |
| Math 341, 342 | Probability and Statistics I and II |
| Math 352 | Theory of Interest |
| Math 441, 442 | Mathematics of Life Contingencies, I and II |

In addition to the required technical courses, students must satisfy the Institute's humanities and social science requirements and also take 36 credits of electives with an area of concentration such as computer and information science, industrial management, or contemporary issues in ecology, technology and society, and economics. A Preliminary Program Announcement has been submitted to the Department of Higher Education for noticing to the higher education community.

## Nuclear Engineering. (Option of the Bachelor of Science in Engineering Science)

In the short range, the Physics Department plans to expand its course offerings in physics, particularly in the nuclear science area.

Over the long term, the Department plans to develop a full program in nuclear engineering and nuclear reactor safety. The Department proposes that such a program be offered under the umbrella of the Institute's Engineering Science Program, and that the offering involve the degree of Bachelor of Science in Engineering Science with a Nuclear Engineering Major. A curriculum embodying such a program should include the following new third and fourth year courses:

| | |
|---|---|
| NE 309 | Nuclear Fuel Management |
| NE 311 | Health Physics |
| NE 312 | Reactor Heat Transfer |
| NE 411 | Selected Topics in Reactor Theory and Design |
| NE 421 | Nuclear Engineering Laboratory |
| NE 422 | Nuclear Reactor Laboratory |
| NE 449 | Senior Project in Nuclear Engineering |

These courses would follow the existing pair of courses in Nuclear Engineering and Nuclear Reactor Theory, which would be re-numbered at the junior level.

The implementation of the program would require substantial expansion of laboratory equipment and facilities to become and remain viable, and to meet accreditation requirements.

At the present time, the Physics Department of NJIT offers the only courses in nuclear reactor theory available in the State. It is likely that a nuclear engineering program at NJIT would remain viable for many years to come.

## Programs in Health-Related Fields

It is apparent that NJIT, as a leading institution within its programmatic area, and in view of its urban location, manifests a strong interest in the solution of societal problems, as for example, those related to the environment, energy, quality of life, resource scarcity, and health. The latter may be addressed through the advantage of close cooperation between NJIT and CMDNJ.

Three different academic programs, all having to do with medical, health, and environmental concerns, are well into the planning stage. Courses in these related areas are already offered in other curricula by various departments at NJIT. Cooperation with the New Jersey College of Medicine and Dentistry provides the additional medically oriented coursework necessary to form curricula in these fields, particularly at the graduate level.

## Master of Science in Biomedical Engineering

Because medicine grows increasingly more reliant upon engineers and engineering methodology, it is necessary to develop a coherent program which can direct interested and concerned engineers toward a career in biomedical engineering.

Interest in the field of biomedical engineering has been increasing. New Jersey Institute of Technology has developed graduate course work related to biomedical studies within a number of engineering disciplines. Graduate students who have such interest are enrolled in programs in the Chemical Engineering, Electrical Engineering, Industrial and Management Engineering, and Mechanical Engineering Departments.

This proposal is designed to integrate the various biomedical interests under an inter-disciplinary umbrella and to offer a single M.S. in Biomedical Engineering, thus more clearly identifying the nature of the academic work involved to prospective students and to potential employers.

Because the faculty, courses, laboratories, and library resources for the proposed degree program are, for the most part, already available, the new degree designation can be implemented at a modest additional cost relative to benefits derived by the Institute and the larger society.

The program brings together existing work being done in this fast growing field and provides a framework upon which future growth can be based.

This program is designed to serve the academic needs of students with educational backgrounds and experience in engineering who desire to study biomedical engineering. A student admitted to the program will be assigned a program adviser who will assist in formulating a coherent program of study based on the student's individual background and special interests. Two new elective courses are desirable to provide a wider range of choices than presently offered:

ChE 6XX Biological Aspects of Transport Phenomena
Math 6XX Biomathematics

Other new courses in the biomedical field will be proposed by the individual academic departments in the usual manner.

## Master of Science in Environmental Toxicology

Another proposed program in the health-related area is a graduate-level toxicology training program, of strong interest to the Department of Environmental Protection. This program will operate in cooperation with The New Jersey College of Medicine and Dentistry. It is envisaged as a two year full-time masters program requiring 33 to 35 credits of required courses and six credits of electives. Nine of the required credits will be given at CMDNJ. The remaining 24, offered at NJIT, will be in areas of chemistry, chemical engineering, and environmental engineering. NJIT electives include IE 615 Elements of Occupational Health, Chem 622 Air Pollution Laboratory, and two new courses:

Math 6XX Environmental Statistics
IE 6XX Environmental Risk Assessment

CMDNJ may suggest additional electives. Enrollment of 15 to 30 students is anticipated.

## Certificate Program In Environmental Safety and Health Technology

The third entry in the group of health-related academic programs is a non-degree three-year evening program in the area of Environmental Technology, planned in cooperation with the New Jersey Department of Environmental Protection.

There is an increasing awareness of health consequences growing out of the environmental problems facing our industries. Federal, State and local governmental agencies are interacting with industry to solve these problems. The New Jersey Department of Environmental Protection has observed a growing need for technicians trained in the environmental, safety and health areas.

It is believed that there are a large number of jobs for individuals capable of interpreting the regulatory laws and applying them in practice. These technicians should also be trained in the areas of process techniques, utilization of existing equipment, instrumentation, controls, data collection and interpretation, communication skills and technical writing.

The proposed program is designed for persons who are high school graduates, who have taken high school algebra but require additional training to acquire new skills for upgrading or retraining. The program would be designed for a three year schedule to be completed by attending three evenings per week in sixteen week fall and spring semesters. Students not wishing to attend three evenings per week could opt to extend completion of their programs beyond three years.

This course of study is not a degree program, but does consist of courses carrying college credit. Students who successfully complete this program may take additional work and apply for junior standing in the existing Environmental option of the Bachelor of Science in Engineering Technology degree program.

## An Integrated B.S./M.S. Program

Academic departments offering the master of science degree are planning a special program which will lead to Master of Science and Bachelor of Science degrees at the end of a student's fifth year. A fourth-year student in the program will take three credits of research in place of three credits of design project work, plus three credits of graduate course work. In his/her fifth year the student will take 24 graduate credits, with at least 15 credits of course work and 6 credits of research. The advantage of this program is that a student may start the masters program in the senior year, and requires only 24 credits in the fifth year as compared with 30 credits for a traditional M.S. student.

## 5.3 EXCERPTS FROM DEPARTMENTAL MASTER PLANS

Master plans of the individual academic departments are in preparation as an integral part of the Institute's current master planning effort. At this time mission statements, department descriptions, and tentative lists of short-range and long-range objectives have been compiled by the faculty of each department. These submissions are being reviewed by the Departmental Master Plan Subcommittee of the Institute Long Range Planning Committee and by the Academic Deans.

Departmental plans for new academic programs have been included in the preceding section. However, additional objectives for academic development such as plans for curriculum options, new course offerings, and learning centers are excerpted here. Plans for departmental research and public service activities will be included in the following two chapters.

### Program Development - Undergraduate

The Institute's undergraduate industrial cooperative program, discussed in Section 5.4, has attained full development only in the Department of Mechanical Engineering, which initiated the pilot program, and is committed to its continued growth and expansion. Further development, an effort which is discipline-specific, is an immediate goal of the other degree-granting departments.

The success of the Learning Center in Chemistry developed by the Chemistry Division of the Department of Chemical Engineering and Chemistry has spawned the planning of such centers, which are also discipline-specific, in the Departments of Computer and Information Science, Electrical Engineering, and Industrial and Management. In Chapter IV the recommendation is made that the development of such centers be encouraged as resources permit.

Akin to learning centers are the specialized libraries developed by the School of Architecture, and the Electrical Engineering and the Computer and Information Science Departments. Involved are specialized books and pamphlets for laboratory use, audio-visual materials for classroom demonstration and individual use, and specialized tutorial computer programs. Most departments are planning to expand these kinds of services for their undergraduate students. The use of some of these media require the development of a special classroom for demonstration purposes, e.g., the use of computer terminals for automated instruction programs.

Another common theme in many departmental plans is experimentation with innovative teaching methods and techniques. The CIS department plans to explore the use of specialized training sessions to teach regular and adjunct faculty as well as teaching assistants and undergraduates.

New laboratories envisioned by the departments include the following:

PROPOSED NEW UNDERGRADUATE AND GRADUATE LABORATORIES

| DEPARTMENT | LABORATORY |
|---|---|
| Civil and Environmental Engineering | Environmental |
| | Structural |
| | Construction Materials |
| | Hydraulics |
| | Rock Mechanics |
| | Photogrammetry |
| | Transportation Systems |
| Mechanical Engineering | Computer-Aided Design |
| | Interactive Graphics |
| | Energy and Engine |
| Computer and Information Science | Text-Processing |
| Electrical Engineering | Superconducting Devices |
| Industrial and Management Engineering | Human Factors |
| Organization and Social Sciences | Economic Research |
| | Management Training |
| Humanities | Language |

Laboratory modernization plans are stressed by the engineering departments, faced with the great technological advances -- particularly in the methods of instrumentation and control -- which can be taught only through laboratory experience. Budget planning in this area is contained in Section 8.3.

As stated in Section 8.3 the Department of Mechanical Engineering, in moving to its own building, plans modernization of its energy, fluid mechanics, dynamics and mechanical systems laboratories as urgent first priorities. Improvements are also planned for the Acoustic and Plastics Laboratories, the Manufacturing Materials Laboratory, and the Machine and Model Shop. Other departments plan similar improvements, chiefly in the addition of equipment to existing laboratories, as funds become available.

## Development of Existing Programs

All academic departments, in their planning, stress the updating and enhancing of the existing programs with new and/or revised courses as well as experimentation with new teaching methods, interaction between faculty and industry, improved articulation with sources of transfer students, etc.

Each faculty member at NJIT is responsible for continuous review of each of the courses he or she is teaching and for changing and upgrading these courses in response to emerging new theories or new approaches to existing theories. In each of the academic disciplines there is a regular annual review of each curriculum just as there is an annual institution-wide review of the core curriculum. These reviews, course by course and curriculum by curriculum, lead to a fine tuning of the academic program. They identify the need for the new courses and the opportunitites for new programs put forth above.

The Humanities Department is seeking a Pilot Grant from the National Endowment for the Humanities. It is proposed that the grant be used for a complete re-examination of the current Freshman Composition course, and the current Freshman-Sophomore Humanities sequence. The outcome may be a revision which would involve bringing historians into the process of teaching writing in their own courses and possibly (if deemed advisable and necessary) in the teaching of formal composition courses. It could also involve alternatives to the structure and content of the Humanities sequence.

## Implementation

The proposals and preliminary plans of the individual academic departments must be evaluated, priorities set, and coordination effected at the Institute level. The Academic Affairs, Long Range Planning and other committees are involved in the process which ultimately devolves to the academic administrative officers. Detailed plans for the most promising proposals must be commisioned and scheduling must be arranged with budget implications explored fully.

Curriculum and program development must be accomplished in an orderly, carefully considered manner to design a realistic pattern of future institutional growth and institutional objectives and to prevent needless expansion of resource requirements, including faculty positions. Every consideration must be given to ensure relevant course and program content through continuing contact with the corporate sector, government, professional societies and alumni; and by careful planning. To accomplish this, it is essential that appropriate funding be allocated to support these development and planning activities.

Because changes in science and technology are so fast-paced, there is a need for each curriculum to periodically undergo a basic and comprehensive study. Such studies include intense reviews of each course in a curriculum, its contents and currency, and potential new courses responding to new technological or scientific concepts. Carrying out redesign of a curriculum requires substantial faculty time to design new courses, redesign existing courses, design new experiments for the laboratory courses and, frequently, design, build and test the equipment to support new experiments.

In FY80 and in FY81 some Institute resources were provided to initiate such a comprehensive review and revision of the curriculum in Chemical Engineering. It is planned to complete the Chemical Engineering curriculum changes by FY82 and initiate similar comprehensive curriculum studies in Electrical Engineering and Architecture.

In FY80 regular review by external reviewers of academic departments and programs was initiated. Such evaluations may in some cases reveal the need for the kind of comprehensive redesign of curriculum described above. Funds will also be required to revise curricula wherever necessary in programs subjected to external review during FY81.

In FY82, it is also proposed that program improvement funds be used to develop new programs. Among the programs suggested above, for FY81 the Institute is considering new programs in Actuarial Science (Mathematics), Resource Management (Organization and Social Sciences), Energy Systems (Interdisciplinary), and Industrial Design, Architectural Studies, Masters of Architecture and Masters of Architectural Studies (Architecture). These potential programs represent NJIT's response to needs clearly expressed by industry and society in general.

## 5.4 PLANS FOR NON-TRADITIONAL EDUCATION

### Accelerated Programs for Freshmen

NJIT's undergraduate catalog lists five ways in which entering students may capitalize on their educational background in order to accelerate their college programs: Early admittance, admission as a sophomore, advanced placement, examinations in specific courses, and the college-level examination program (CLEP).

1. Early Admittance

   Exceptional students who can meet the appropriate testing and course requirements for a particular program of the freshman year may qualify as freshmen without completing the senior year of high school or receiving a high school diploma.

2. Admission to Sophomore Year

   This program, complementary to early admittance, provides for granting of college freshman credits for outstanding incoming students and placing them as sophomores.

3. Advanced Placement

   Applicants may be awarded credit for freshman course work in a number of areas by taking the proper courses in secondary school and attaining satisfactory scores on appropriate Advanced Placement Examinations. It is possible in some cases for an applicant to receive credit for two semesters in a course and begin studies in that subject at the sophomore level.

NJIT also makes arrangements with nearby high schools that permit high school students to take specific college courses on the NJIT campus, such as introductory courses in computer science.

Few students currently take advantage of these programs, and the Institute plans to advertise their existence more widely and to study ways to add to their attractiveness.

## Credit by Examination

Credit by examination appeals more to the older and part-time student than to incoming freshmen. Two such programs are offered:

1. College-Level Examination Program (CLEP)

   Applicants may be granted course credit for non-traditional college education such as independent studies or job-related experiences by successfully passing appropriate CLEP Subject Examinations.

2. Examinations in Upper-Level Courses

   Accepted candidates may be granted credit for certain advanced departmental courses by successfully passing departmental examinations to demonstrate proficiency in each subject area.

Academic departments are planning to expand the number of courses in which examinations will be offered.

## The Cooperative Education Program

The Cooperative Education Program, recently reintroduced at New Jersey Institute of Technology, gives the student an opportunity to be exposed to professional practice by placement in business, industry and government agencies. Cooperative Education is a voluntary five-year program, available to those who have completed the first and second year at NJIT with a GPA of 2.2 or better. The program provides the student with two six-month work periods during the junior academic year which spans two calendar years.

During the work experience portion of the Cooperative Education Program, classroom theory is coordinated with relevant application in business and industry situations. Students involved in work experience are paid salaries in accordance with employer standards commensurate with educational levels. From the view of the student in the program, he or she is able to defray a portion of college expenses, but the program by its design does not permit the student full support of undergraduate study.

The purpose of the Cooperative Education Program is to integrate classroom theory with practical experience. The following points should be emphasized:

1. The student's work is related as closely as possible to the field of study and individual interest within the field.

2. The employment is considered to be a regular, continuing and essential element in the educational process, and some minimum standard of performance is expected to be included in the requirement for satisfactory completion of this phase of the student's work.

3. The work experience during the two periods increases in difficulty and responsibility as the student progresses through the junior-year curriculum, and in general parallels as closely as possible his/her progress through the academic phases.

The Mechanical Engineering program started in 1976 with the placement of one group of 13 students with 12 employers. Presently, there are 15 Mechanical Engineering students in work experience, 12 Chemical Engineering students, eight Electrical Engineering, seven Industrial Engineering, one Civil Engineering student and two in Computer and Information Science. During the fall 1979 semester, 41 Cooperative Education students were enrolled in their academic programs; they returned to their positions in industry for their second work experience at the beginning of the 1980 calendar year. An attempt is currently being made to enlarge the Co-op program with more students from engineering disciplines and Computer and Information Science, and to include students in Industrial Administration, as mentioned in Section 5.3.

## Minority Engineering Scholars Program

A new form of cooperative program which combines several traditional approaches to education and yet is fundamentally non-traditional was instituted for FY-80. It is the Minority Engineering Scholars Program which offers ethnic groups currently under-represented in engineering an innovative and improved access to the profession. The program, coordinated by the Institute, offers prospective employers a mechanism to move toward their affirmative action goals and attracts qualified students who may not be fully eligible for the established educational aid programs. This past year, the Foundation at NJIT secured corporate support for this program.

Under the program, the sponsors provide scholarships for tuition, fees, and miscellaneous expenses at NJIT including room and board. In addition, students are employed by the sponsoring firms during summers and undergraduate years. The Institute five-year Cooperative Education Program is also an option available to these students.

Upon earning engineering degrees, students are offered employment options with established seniority. Close liaison is maintained between the corporate representatives, the Institute staff, and the students involved.

The Institute is making strong efforts to expand the Minority Engineering Scholars Program as a means of increasing the number of minorities in the profession.

## Self-Paced Instruction

For several years NJIT has experimented with Self-Paced Instruction. The vehicle for this experimentation has been a sophomore course in statics and dynamics, a required course for engineering students. Students may choose to enroll in a regular class recitation section of the course or in the section where self-paced instruction is used.

This sophomore self-paced mechanics course covers the standard content of undergraduate statics and dynamics. However, the teaching format and the course requirements are different from those of traditional courses. This course has four basic characteristics:

1. The content is divided into separate learning modules each of which is nearly self-contained. For example, some modules are constructed from one or more chapters of a standard textbook.

2. The student proceeds through the modules at his own time rate, as long as he completes the work within one year.

3. The student must demonstrate mastery of a module (by showing adequate knowledge of the principles in a written test) before he can proceed to the next module in the series.

4. The teaching format is tutorial; there are no formal class meetings. Faculty and graduate assistants are organized as a team to provide tutorial assistance and all course management services. Students can earn a 4 or a 3 grade by passing a prescribed set of modules.

Data and experience have shown that some changes in the learning format may be necessary. There have been complaints that self-paced students are not as well prepared for later work in structures and mechanical design as those who take the regular course. The Institute will closely examine this matter during the current year by comparing performance of students in both groups at the end of their work in mechanics. A common final examination will be used as a means of measuring performance.

The need for supplemental learning materials has become evident. Each module for the course requires a slide-tape presentation that emphasizes and clarifies key concepts, to be used in a learning center location -- either the library or in a special tutoring room.

If the self-paced format does indeed foster improved learning in this course, its application will be encouraged in other courses such as computer programming and fluid mechanics.

Air Force ROTC Program

The academic programs at NJIT meet the technical needs of the U.S. Air Force, and NJIT continues to include, as it has for some time, an Air Force ROTC program. Present enrollment in the program is approximately 100 students, 35% of whom are NJIT students. The other 65% come from nine institutions with either cross-town arrangements (William Paterson, Montclair State, Kean, Seton Hall, Stevens Institute, St. Peter's and Jersey City State), or consortium arrangements (NCAS-Rutgers and Essex Community College).

All applicants to the AFROTC program must meet a minimum standard with regard to cumulative grade average and Scholastic Aptitude Test scores, and must also demonstrate the potential for leadership.

The Air Force has increased the number of scholarships which pay tuition, books, fees, and a subsistence allowance of $100 per month. There are presently 24 student scholarships, 6 of which are held by NJIT students.

An immediate goal for the Air Force ROTC program is to increase enrollment in order to insure a sufficient resource of candidates for selection of well qualified students into the Professional Officer Course.

This increase in enrollment will be accomplished through increased recruitment efforts at NJIT and other schools that have crosstown and consortium agreements that cover AFROTC. Additionally, certain Aerospace courses will be taught at Stevens Institute of Technology. More frequent visits will be made on campuses to make students aware of the Air Force ROTC availability at NJIT. Just as important as obtaining new resources is keeping the students currently enrolled. Two programs have been initiated to portray a good image and enhance the morale of the cadet corps. First is the continuance of the program to enhance the cadet uniform appearance. The second is the improvement of Cadet Headquarters facilities for more efficient operations and better visibility for recruiting efforts.

Close liaison with all other departments at NJIT will be established to insure new Aerospace Department Faculty familiarity with all aspects of the NJIT curriculum in order to properly utilize the students' education in counseling on Air Force careers and assignments.

Long range goals include the following:

1. Promote the Aerospace Studies Program at other institutions with "crosstown" or "consortium" agreements and initiate additional ones where appropriate and mutually beneficial.

2. Initiate additional programs to support NJIT recruitment of high

caliber students capable of and interested in qualifying for AFROTC scholarships.

3. Review and update on a recruiting basis the Aerospace curriculum, with the Air Force and Institute guideliness, to insure currency of the material in a changing environment.

# CHAPTER VI. RESEARCH DEVELOPMENT

## 6.1 HISTORICAL

Research is an essential endeavor of a technological university. It generates new knowledge vital to the State and the nation, it provides important educational experiences for graduate students, and it is a critically important element in faculty development. Fifteen years ago the Institute launched a major effort to increase its research activities by recruiting faculty with research potential, by rewarding research productivity, and by seeking substantial external research funding. By any measure, impressive progress is evident. The level of research publication has increased dramatically. External funding increased to $365,000 in 1969 and to nearly two million dollars in 1979. (Total research expenditures were more than 2.75 million dollars.) Important contributions have been made by the State in research allotment of teaching lines and in Separately Budgeted Research. Industrial support is sought through the Foundation at NJIT.

In 1969 the Separately Budgeted Research program did not exist. The student-support program was approximately one-third of the 1979 figure. Research initiation support was approximately $75,000 and there was no support for released time for research other than that which the Institute could supply by appropriately arranging its teaching schedules. A 1969 figure comparable to the 1979 total research program support of 2.75 million dollars would be approximately $530,000, thus there was a four hundred and twenty percent increase in ten years.

The Institute was involved in 66 research projects during fiscal year 1979. In 1980, this number grew to 86 projects amounting to over $5 million in grants and contracts, for periods often extending beyond 1980.

During this period of growth, although some faculty and students have pursued purely theoretical topics, the main thrust of the Institute's research effort has been in applications of technology, especially that technology pertaining to the analysis and solution of modern societal problems. Recently, NJIT has been requested by the Federal Environmental Protection Agency to act as a central State resource in the environmental area.

The approximate levels of research activity during the 1978-1979 fiscal year, as measured by expenditures, are as follows:

| | |
|---|---|
| Externally Supported Programs | $1,940,000 |
| Released Time for Research | 360,000 |
| Separately Budget Research | 277,000 |
| Support of Students (Foundation) | 84,000 |
| Research Initiation (Foundation) | 96,000 |
| | $2,757,000 |

In its role as a technological university, NJIT will continue to take steps to increase its research activities. With needed support from the State, from local industry and from federal sources, the research program should continue to manifest strong growth.

## 6.2 PLANS AND PROJECTIONS FOR RESEARCH DEVELOPMENT

In a period of curtailed federal support of basic research, NJIT has been successful in increasing its research funding through its emphasis on applications, as for example, in the area of environmental protection. State-funded environmental impact studies have served as models for public involvement. In yet another area of considerable current and future societal interest, computer conferencing, the Institute has emerged as a national leader, involving individuals throughout the nation.

### Facilities and Services

Accompanying the fourfold increase in research activity of the last ten years has been a comparable demand for support services and other resources, e.g. space and facilities. Future development requires that these demands be addressed:

(a) Laboratory space available for research has not kept pace with research growth and will require augmentation.

(b) Laboratory facilities. Plant facilities such as plumbing, electrical work, laboratory furniture, renovation and repairs represent an ever-increasing cost consideration.

(c) Laboratory equipment. State-of-the art scientific equipment, capable of making sensitive measurements or controlling complex systems must continually be acquired.

(e) Shop work. Use of machine, wood-working, electrical and other shops requires experienced personnel.

(f) Graduate student support. Additional internal funds are needed to suppport graduate students.

(g) Cost-sharing. Cost sharing in most externally funded programs ranges from five to fifty per cent of the total program costs.

(h) Administrative services. Administrative support personnel are required to satisfy a wide variety of services, including grant preparation, record keeping and analysis.

(i) Legal services. Currently, fully half of NJIT's negotiated agreements with federal, state, municipal agencies, and private firms require careful legal study.

(j) Patent services. Administration of patent activity has increased with research growth.

(k) General services. General services such as photocopying, telephone usage, clerical services, and travel have increased with the growth in research activity.

The foregoing demands on Institute resources have been a natural outgrowth of the research program, where the effects of growth are self-evident. Not so obvious, however, are the additional demands placed on the Institute's resources by the increased regulatory outreach of the federal government. NJIT faces increasingly complicated reporting requirements in areas such as:

(a) Research involving human subjects

(b) Continuous inventory maintenance of all equipment and supplies purchased with federal funds

(c) Affirmative action and equal opportunity

(d) Consultants

(e) Time and effort reporting

(g) Accounting

As the Institute's research involvement has grown, the primary cost of supporting research has been absorbed by the Institute, thereby burdening other components of the budget, and plans must be implemented to alleviate this situation.

## Plans for Special Research Programs

Each of the programs supported by the Separately Budgeted Research Funds has been the subject of an intensive peer review process. On the basis of this process, one program was discontined at the end of FY79. With one exception, it is expected that the remaining programs will receive some degree of external support by the end of fiscal year 1979-1980.

The projects planned for FY80-81 through FY81-82 are briefly described in the following pages. In Section B, New Programs, items 7 through 10 are tentative, as they represent current thinking with respect to research being planned for 1981-82.

## A. Continuing Programs

### 1. Processing of Industrial Materials

This general area is very broad and includes many materials. It is proposed that this program be continued, embracing the following related plastics processing projects:

1. Rotational molding
2. Thermoforming

### 2. Fiber Research

Researchers are working on fibers which have special characteristics, e.g., fire resistant fibers and health related fibers. It is the purpose of this research to continue a program concentrating on areas given minimal emphasis by industry, but nevertheless of major societal concern.

### 3. Blood Flow Studies

An experimental study is in progress to determine the effect of obstructions to blood flow on the acoustical patterns emitted by the blood flow system.

It is proposed that a more sophisticated control system be incorporated into the experimental system so that testing can more closely approximate the conditions that exist in heart patients.

### 4. Metabolic Modeling

Project activities involve modeling of active transport mechanisms through erythrocyte, the metabolism of vinyl chloride; the development of clinical tests for early detection of metabolic disorder of patients hospitalized for severe burns and open heart surgery; the modeling of kidney membranes of diabetics for early detection of tissue damage; modeling of cerebral blood flow; and the modeling of the human menstrual cycle.

## 5. Productivity Assistance

The Industrial Engineering team associated with this program intends to set up a kind of extension service for small business firms and public agencies to aid these institutions in developing systems intended to help them increase their productivity. They have already received modest support from the Small Business Administration directed primarily at minority owned businesses.

Service specializations this group is offering include the following:

- Methods Improvement and Work Simplification Studies
- Occupational Safety and Health Audits
- Human Factors/Ergonomics Applications
- FDA Manufacturing Procedures Evaluations
- Cost Reduction/Value Analysis/Design to Cost
- Skills Development for Handicapped/Women/Minorities
- Quality Assurance/Product Liability Studies
- Compensation Studies/Job Evaluation/Incentive Plans
- Site Location/Relocation/Plant Layout
- Equipment Maintenance/Modernization Studies
- Computer-Aided Manufacturing/Robotics
- Shipping/Warehousing/Distribution Evaluations
- Cost Systems/Scheduling Systems/Work Schedule Models
- Productivity Audits/Resource Uitlization Studies

## 6. Transportation Studies

### (a) Demand Responsive Subscription Ridesharing Service (DRSRS)

The DRSRS is a flexible ridesharing system that may eventually be used to supplant a significant number of daily automobile trips. The basic concept is that people who wish to rideshare (either as passenger or driver) would become part of the DRSRS (subscribe to the service, or enroll in the system). A person wishing to employ the service would telephone the ride-sharing coordinator or dispatcher, place a request and provide the relevant trip data. The request would then be matched with a compatible trip and a ride-share would result. DRSRS trips need not be made on a regular basis, nor at the same time or to the same location for each rideshare. While significant difficulties and constraints are seen for a service of this type, there is also potential for significant gains in personal mobility and in the efficient use of fuel and roadways.

This study addresses the feasibility of a DRSRS considering user demand, technological requirements, human behavioral and sociological responses, organizational and administrative sturcture, and financial considerations. A case study analysis will be undertaken after the proper 'travel-shed' size is estimated. Future support for this and related projects will be sought from transportation agencies.

### (b) Child Safety Restraints for Vehicles

This research project has several objectives. These include the development of data bases from which to (1) evaluate the new types of restraints appearing on the market, (2) determine the effectiveness of programs in this geographic area, attempting to increase restraint usage, and (3) initiate regulations that increase the level of protection that can be provided with existing devices and technology. The first phase of the work would include data surveys to (1) establish a comparative base with which to evaluate design and program changes, (2) survey and document the existing usage programs and their structure, and (3) identify alternative regulatory approaches to increase the level of protection provided to young passengers.

### (c) Systems Approach to Transportation/Land Use/Energy Conservation Management with Emphasis on the Journey to Work

NJIT is developing a data base quantifying the cost of transportation, housing, and energy for each potential urban and suburban work location, so that the impacts of industrial location and relocation decisions and government policies may be developed with a sound basis.

NJIT has processed data on the impacts of corporate relocations to the suburbs or to the Hackensack Meadowlands. The change of employee residential location, modes and lengths of travel as determined by this study could be a starting point for developing information on petroleum usage and total energy usage for such moves.

The concept of a modified Environmental Impact Statement (EIS) may be introduced for municipalities, developers, and/or industries considering relocation to produce an analysis involving the impacts of petroleum usage on such a development and/or relocation. NJIT could develop guidelines for such a modified EIS, structuring the data requirements and methodology for analysis. The State could mandate a zero petroleum increase standard for a corporate relocation or a limiting increase of consumption per employee. Initially, NJIT could work on such an EIS for a hypothetical firm or for a recently relocated firm, while also suggesting ways and means of reducing petroleum consumption.

## 7. Corrosion of Material Used in Enhanced Oil Recovery

One of the more promising approaches being used for enhanced oil recovery is to use either dry carbon dioxide ($CO_2$) or $CO_2$ mixed with steam or water under pressure. The $CO_2$ lowers the viscosity of the oil and therefore makes it easier to bring it to the surface. The area of enhanced oil recovery is important at both the national and state level as a means of increasing the potential petroleum supplies in the United States.

Several materials problems have arisen with this technique, the foremost one being the corrosive nature of the $CO_2$-water system. In this project, the research team is studying the corrosion behavior of various stainless steels (low alloy steels) using electrochemical methods.

The technique of potentiodynamic anodic polarization (potential versus current density) yields important information such as:

(1) The ability of the material to spontaneously passivate in the medium.

(2) The potential region over which the specimen remains passive.

(3) The corrosion rate in the passive region.

## 8. Urban Construction and Rehabilitation

The objective of this program is to provide front-end technical assistance to New Jersey non-profit organizations such as the New Jersey multifamily housing demonstration program groups. The team of faculty members has been in contact with the directors of three of the fourteen multifamily housing development program groups and will meet with the others during FY81. These groups have legal and business expertise but usually lack experience in technical areas. The need for engineering input is critical at the inception of redevelopment projects in areas such as structural evaluations, building code requirements, technical advice, estimates of construction costs, and selection of architectural and engineering contractors.

The NJIT team is providing much needed technical assistance so that these and similar non-profit groups can make better informed decisions before committing scarce resources to a project.

This team is also developing inventories of urban rehabilitation needs to aid in making rational planning decisions. Study areas are being evaluated and a data base is being established for these areas to measure the effectiveness of community revitalization efforts. The developmental work involves the following:

(A) Continuation of literature search.
(B) Contact with Newark City Planning Commission.
(C) Mapping of a multi-family housing study area.
(D) Developing specific evaluation criteria as follows:

1. Establish safety and health levels of existing buildings.
2. Estimate rehabilitation work needed.
3. Evaluate cost of rehabilitation work.
4. Establish financial condition of buildings.

This team expects to submit several proposals during FY81 to potential industrial sponsors. They are also planning to discuss with the New Jersey Department of Transportation the possibility of supporting a study of the disruption to urban life caused by urban tunneling projects.

## 9. Models for Improving Organizational Commitment

As traditional institutions diminish in their ability to provide a sense of personal identity, occupations become increasingly important to a sense of social belonging. On the other hand, individuals often feel little or no sense of participation or belonging in the work situation and attach little value to their membership. Thus one can conceive of a dimension of job involvement running from high organizational dedication to intense alienation. The issue of improving job commitment should be of substantial interest to management especially as it relates to problems of absenteeism, turnover and labor strife.

The current study focuses on the relationship between various significant forces impinging on hospitals. Four major areas are being examined sequentially:

| | |
|---|---|
| Phase I. | Investigation of the Hospital Work Force and Key Influences |
| | Employees - Turnover, Labor Relations, Absenteeism, Sex Role Sterotyping, and Impact of Labor Unions |
| Phase II. | Investigation of Community Input |
| | Board of Trustees<br>Community Organizations |
| Phase III. | State Associations |
| | Accrediting Agencies<br>Hospital Associations<br>Third-Party Payers |
| Phase IV. | Graduate Schools of Hospital Administration |

The goal is to develop diagnostic measures for ascertaining organizational well-being and approaches towards heightening organizational commitment.

## 10. A Process for the Removal of Sulfur Dioxide From Flue Gases

The development of a new process for the removal of sulfur dioxide ($SO_2$) from flue gases involves: conversion of $SO_2$ amd $SO_3$, removal of $SO_3$ by reaction with alumina, and regeneration of the resulting aluminum sulfate with carbon monoxide to yield alumina and sulfur. This process is "dry", with no water solution or slurries involved, and it has the following advantages over conventional "wet" processes:

- No corrosion problems
- No solid waste problem since the resulting sulfur can be marketed
- Estimated lower cost.

The program has four phases associated with it. Phase I addresses the following problems:

- Potential catalyst poisoning of the $SO_2$ oxidation step
- Determination of appropriate particle size for achieving 90% minimum sulfation
- Alumina attrition
- Regeneration scheme

In Phase II semicontinuous mini-bench scale tests will take place. The research group has begun discussion with an industrial firm to join in submitting a proposal to support Phase III, an engineering and economic evaluation, and Phase IV, constructing and operating a pilot plant.

## B. New Programs

### 1. Office Automation Systems

It is proposed that a program be initiated utilizing the Electronic Information Exchange System at NJIT to investigate the use of computer-based communication systems to automate many of the office management tasks which currently require much time and effort of key personnel.

### 2. Reactions of Atomic Hydrogen with Freons and Other Halocarbons

The purpose of this investigation is to study the kinetics and product formation associated with the reactions of atomic hydrogen with freons and other halocarbons.

### 3. Routing of Chemicals: Modeling Studies, Monitoring Studies, Assessment.

The object of this proposed study is to develop a general methodology for transporting any chemical. Chemicals in commerce can be characterized by physical, chemical, toxic, and explosive properties; possible routes; and by demographic, environmental, and economic factors. Alternate routes of equivalent economic impact, but significantly different environmental benefits, will be characterized.

4. Human Prosthesis

This proposal concerns the study of the mechanical and biological properties of wear and friction resistant films produced by sputter, ionic or related plating processes to determine their suitability for use as wear resistant coatings for implantable, artificial, articulating human joints.

5. *Analysis of Hazardous Organics

The purpose of this project is to examine particulate emissions from the pyrolyses of solid wastes differing as to type, source, and degree of processing. Specifically, processed municipal wastes will be burned and their emissions compared. Experiments will be performed to compare the above emissions with those of coal; coal mixed with processed municipal wastes; processed municipal wastes mixed with additives such as alumina, silica, and clays which may serve as catalysts; and rubber tires - a specialized waste. Classes of compounds to be monitored include: a) polynuclear aromatic hydrocarbons (PHA's or PAH's) such as benzo(a)pyrene and benzo(a)anthracene, which are carcinogenic by-products of fuel (especially coal) combusiton; b) aminoaromatics such as naphthylamine and benzidine derivatives, which have been components of rubber tires and dyestuffs; and c) chlorodiozins which are highly toxic substances said to be by-products of the combustion of municipal wastes.

Solid wastes will be burned in a furnace, the particulate emissions collected on glass fibre filters, and the organics extracted and analyzed. The analytical methodology will ultimately employ

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*Items 5 through 8 are tentative projects being planned for FY81-82.

high-performance liquid chromatography (HPLC). Should particular fuel mixtures show promise as clean energy sources with respect to emissions of the classes of substancess cited above, experimental heats of combustion will be obtained for one-gram samples.

The recycling and combustion of solid wastes should reduce the problems of solid waste disposal endemic to Metropolitan New York and New Jersey municipalities. These municipalities must also satisfy EPA clean air standards and compliance is complicated by mass combustion of solid wastes. The proposed study will shed light on the relationship between waste composition and emission. It may also aid understanding of the nature of emissions from landfill fires, which are a chronic menance to the local environment, particularly in areas of Northern New Jersey.

## 7. Anesthetic Gas Warming in Pediatric Apparatus

Current practice does not provide for heating or humidification of anesthetic gases. This lack of proper gas temperature conditioning is due to the difficulty in providing a safe external heat source as well as space constraints of the operating room and anesthesia machine.

The specific aims of this investigation are to design, build and test a working model of a novel miniaturized compressor-expander system, powered by the already available gas supply in the operating room, to properly warm anesthetic gases used in pediatric anesthesia. This miniaturized compressor-expander system is intended to provide properly temperature conditioned anesthesia gases to a pediatric patient undergoing surgery, thereby avoiding potential problems such as patient hypothermia and cellular dysplasia of the tracheo-bronchial tree due to prolonged exposure to cold anesthetic gases presently used.

Various approaches have been explored to maintain the inspired gas used in anesthesia at or close to body temperature. These have included the addition of an elecric heater element placed within a humidifier or the utilization of heat produced by the neutralization of barium hydroxide lime by carbon dioxide. Both of these techniques have inherent problems, involving possible electric shock to, or chemical contamination of, the patient.

The significance of this investigation involves the design, building and testing of a novel miniaturized compressor-expander system, powered by a gas supply commonly available in the operating room, to accomplish the significant medical objective of properly warming gases used in pediatric anesthesia. This proposed method has many important potential advantages including safety, small size, low cost, ease and convenience of use. By utilizing such a device, pediatric patients undergoing anesthesia would not be subjected to cold gases, thereby preventing possible hypothermia and/or tracheo-bronchia cell disruption.

## 7. Improvement in Raised Line Graphics

The proposed program is intended to develop a set of guidelines that should eventually evolve into conventions dealing with the production of legible raised line drawings and the teaching of raised line drawing reading by the blind. The investigators' combined background in engineering and psychology will permit them to draw on the current state of knowledge in engineering graphics and naptic perception to formulate a set of guidelines, test them, and modify them according to the test results.

The need for effective means of raised line graphic communication can be divided into two categories. The blind population in general needs some knowledge of raised line graphics to be able to read maps, floor plan layouts, and instruction booklet diagrams. Then there is a smaller group, consisting of students and practitioners in science and technology, and diverse mechanics and artisans in various lines of endeavor. To blind individuals interested in education and careers in these fields, an effective means of raised line graphic communication is indispensable. Thus, research and development of improved methods in raised line graphics for the second group is directly related to the intent of Section 504 of the Rehabilitation Act of 1973.

Although it is envisioned that the proposed program will help all blind individuals, as explained above, the main thrust of the program is aimed at the second group.

### 8. Effects of Surface and Pore Characteristics of Coal on the Kinetics of Coal Gasification Reactions

It is recognized that, besides the chemical compositions of the coal/ char itself, the pore characteristics, the content, distribution and chemical states of the mineral matter and the trace elements, may have profound effects on the gasification characteristics of coal/char. A detailed analysis of the physical and chemical properties of a char with the progress of the reaction as it reacts in different gaseous environments, temperatures and pressures, is thus very important. Such factors as particle size and pore structure, which determine the accessibility of the char to the gases involved in gasification, must be determined. The role of impurities in the coal, such as metal oxides, metal halides, alkali carbonates which catalytically affect the rate and products of coal gasification, and the acidity, the oxygen content, and general organic structure of the char which determine its reactivity, should be studied. These studies would help not only in identifying the factors that determine the reactivity of coal/char but also in establishing the optimum conditions and the selection of the best catalysts for various gasification schemes.

## Research Centers

In the early 1970's, the Institute created two research centers, the Computer Conferencing Center and the Center for Technology Assessment. Both have been successful in establishing significant research programs in their areas of interest. These successes have recently led to the creation of several other Centers of research activity at NJIT.

### 1. Computer Conferencing Center

The Computer Conferencing Center conducts a program of research, development and evaluation utilizing computer and information technology as a direct aid in facilitating the human communication process, in aiding human groups in dealing with complex problems on a collective basis.

This Center has established, with substantial National Science Foundation support, an intricate international communication system based on a dedicated minicomputer system. The Center expects in the near future to:

- develop and use technology for office automation and management.
- investigate critical issues in man-machine interfaces as they relate to computer conferencing.
- investigate public use of the system.
- develop educational applications.
- develop applications for the handicapped.
- continue basic investigation in human communications behavior and cognitive information processing.

## 2. Center for Technology Assessment

The Center for Technology Assessment engages in a wide range of activities in areas such as energy and water conservation. Activities in these areas include the following:

- development of more advanced methodology for the discipline of Technology Assessment and Technology Forecasting.
- a full program of basic and applied research in the field.
- a program of education through institutes, conferences, and seminars directed to various groups in the society: college students, blue and white collar employees of state, local and federal governments, industry, and the community in general.
- a consultation with industry, government and the community where an assessment or forecasting need exists.
- publication relating information in the field to a wide audience.
- programs of joint research with other institutions.
- programs of international exchange at both the student and expert levels.

## 3. Law and Technology Center

It is the object of the NJIT Law and Technology Center to act as a resource center on legal problems of a highly technical nature in the fields of energy, health and safety, and the environment. This Center will provide educational, research, and advisory services. It is to be staffed by an interdisciplinary group of lawyers, scientists, engineers, and economists.

4. Center for Social Architecture

The purpose of this Center is to establish a program of research which deals with the impact of the built environment on human activity and well-being. As a first effort, the Center will edit a new professional journal entitled "Columns" which will deal with social architecture. The journal, an annual, will be pubished by Van Nostrand Reinhold. The first issue is expect to be released late in 1980.

5. Air Pollution Research Center

The Air Pollution Research Center has been established to provide a facility for monitoring air pollution, developing new and improving existing methods for monitoring and analyzing air, and studying reaction kinectics of selected atmospheric pollutants. The Center expects to expand its activities to include monitoring and analysis of air samples around waste sites, coal or synfuel burning sites, and parking facilities. It is also planned to initiate studies concerning air polutant transport into and through the northeast corridor of the United States.

6. Environmental Systems Laboratory

Studies in this laboratory have focused on industrial waste problems. The interdisciplinary team which carries out the various studies is comprised of chemists, chemical engineers, electrical engineers, and civil engineers. They have developed new instrumentation for monitoring industrial water and air streams, and new technology for reducing polluting emissions to the environment. In the future, this group expects to focus on the potential environmental hazards associated with coming energy technologies. These would include, for example, the use of coal and synfuels.

## Future Plans

A number of faculty are studying the development of centers which would address the areas of academic work, research, and service in specialized areas. In progress is the development of policy guidelines governing the creation of such centers.

1. The Civil and Environmental Engineering Department will initiate plans for a Center for Geodetic, Photogrammetric, Mapping, and Surveying which would offer these services to the State of New Jersey.

2. The Mechanical Engineering Department plans to formalize its research work and programs for the handicapped by establishing an Engineering Center for the Handicapped.

3. The Department of Electrical Engineering is studying the feasibility of a center for research in the area of instrumentation. The goal of this center would be to relate its work to other areas such as energy conversion, micro-electronics, biomedical engineering, communications systems, control systems, and computers.

4. The Department of Organization and Social Sciences seeks to develop more fully its role within the organizational and operations management area of the Rutgers-NJIT doctoral program in Management, and to provide a concentration in human resources and organizational behavior. The Department will investigate development of a Center for the Study of Human Resources Management, which could become a joint enterprise with the Center for Technology Assessment.

5. Other programs under consideration include a Center for Toxic and Hazardous Waste Management, a Productivity Center and an Advanced Design Center.

## Role of the Foundation at NJIT

The Foundation at NJIT was organized in 1959 to encourage graduate study and research, with support derived principally from those industries which recruit graduating engineers or have other ties to the Institute. Annual support provides funding of approximately $180,000 each year toward specific research programs.

The Foundation has as its fiduciary, a Board of Overseers. The members of this board represent the critical bridge between the needs of the corporate community and the allocation of resources within the university. Members of the Board are selected in part for their demonstrated expertise in the disciplines offered by the Institute, and in part for their standing as civic and corporate leaders. Much of this Master Plan is fundamentally centered on the balance between socio-industrial demand and program and resource availability. The Foundation Board of Overseers plays a significant role in assisting the Institute in realizing an appropriate balance.

Private support secured by the Foundation at NJIT was the catalyst which resulted in the strong growth of research, as is appropriate to the mission of a technological university.

Current Foundation-supported research projects include nationally recognized investigations in computer conferencing and information exchange, microelectronics, environmental studies in the disposal of hazardous wastes, air pollution monitoring, energy conservation, and alternative energy sources, all of which were discussed above. In the fall of 1980, the Overseers recommended and have undertaken a twelve million dollar capital campaign to fund facilities needed by the university in order to maintain a margin of excellence.

# CHAPTER VII. PUBLIC SERVICE

## 7.1 INTRODUCTION

As a technological university the overall mission of NJIT includes public service* as a major goal. For years the Institute has carried on an extensive and varied program of public service activities as outlined in the Institute's Master Plan, Phase I. With increasing pressures on society generally and government in particular, and with a pronounced technical orientation of these pressures in the 1980's there is need to place even more emphasis on these efforts and assign to them a higher priority.

The policy of the Institute is to offer personnel and facilities for public service activities in those areas where NJIT is uniquely qualified to serve and where, within the Institute's limited resources, the allocation of resources offers the possiblity of maximal effectiveness. Many of the costs associated with public service are borne by external grants and by the operating budgets of the participating departments within the Institute, although a very significant contribution is made by individual faculty and staff members who freely offer professional services or participate in other community and public service activities related to their roles at NJIT.

There is an urgent need to establish greater recognition of these activities and the importance of their benefits to the public, and to obtain financial support from the State for their continuance and expansion.

As a dimension of its 1980/81 Centennial celebration, the Institute is reinforcing its committment to two specific areas of public concern -- problems of the urban environment and the expanded possiblities of technical education.

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*Public service is here defined as any activity carried on by an office of the Institute or a staff member (presuming that his/her position at the Institute is made known and is in some way related to the activity being performed), and that the activity involves direct and personal interaction between the individual and the community, of value to the community.

## 7.2 PUBLIC SERVICE FOR SOCIETY AND INDUSTRY

### Urban Mission

Over the last two years the Institute involvement in urban affairs and public service related specifically to the City of Newark has expanded considerably. For example, the Institute has been active in support of Federal legislation which would provide for the designation of Urban Grant Universities with funding designed to enable them to respond more effectively to the needs of their urban environments.

An ad-hoc committee on urban involvement has been coordinating efforts with regard to the city of Newark. Among these is a broad ranging support program providing assistance to the city in a number of ways. For example:

> Under the coordination of an NJIT-Newark Board of Education Coordinating Committee, an NJIT Civil Engineering faculty member has been assigned full time to the Newark Board of Education to help develop an effective facilities management program. Fifty per cent of the person's time is contributed by the Institute as a public service. The remaining fifty per cent is supported by the Newark Board of Education.
>
> Through the same coordinating effort, an NJIT computer scientist is working with the staff of the Board of Education to develop recommendations to improve the Board's computer facility.
>
> Similarly, a faculty member in Industrial and Management Engineering is working with the Board of Education's Central Maintenance Group, studying various ways to optimize the managerial system in use.
>
> The Institute is also providing technical services to Newark in the analysis of abandoned waste materials for possible hazardous content.
>
> An NJIT architecuture faculty member has worked with developers and neighborhood organizations in designing "vest pocket parks", and a neighborhood meeting and work center. The cost of materials for this work is in part supported by a grant from the Victoria Foundation, but release-time is also provided by the Institute in support of this project.

Several of the Institute's successful efforts in direct service to the City of Newark and its school maintenance programs and in neighborhood development have evoked interest in neighboring municipalities. At least one other major New Jersey city has approached the Institute, expressing interest in technical assistance. Contemplated by the Institute is the development of an organized effort in this direction to include energy studies, hazardous waste analysis and air and sound pollution measurements.

Current efforts to coordinate and broaden Institute-wide public service activities will make even better use of the talents of NJIT faculty and staff in addressing the problems of the community at large. Special attention is being directed toward further developing NJIT's commitment to the city of Newark and efforts to seek solutions for the urban problems it represents so dramatically. But these efforts require increased funding. At least part of this funding should take the form of a rational pattern of State subsidy -- a subsidy that will surely yield the people of New Jersey a significant return on their investment. As in the past, however, additional funds will be sought directly from the federal government and from the private sector.

## Education for an Understanding of Technology

As society confronts an increasing number of issues in which technology has a clear impact on the welfare of the American people, it becomes increasingly important that people be at least conversant with the language of science and technology. No one will be served if, rather than making reasoned judgements on such questions, the promises of one group or the alarms of another are heeded blindly. The Institute's efforts to expand the understanding of science and technology in the general population of New Jersey are directed mainly toward a pre-college audience. One series of programs is aimed directly at New Jersey school children and is coordinated by the NJIT Center for Pre-College Programs.

Some of the Center's activities are listed below:

High School Summer Urban Engineering Program
Academic Year - Short Course - Urban Engineering Program
College Bound Program
Upward Bound Program

University High School Program
Advanced Placement in Computer Programming
Computer Science Institute For Secondary Schools
Project Seed (Subcommittee for the Employment and Education of the Disadvantaged) Catalyst Program
Tomorrow's Scientists and Engineers-Phase II (TSE II)
Summer Urban Engineering For the Junior High School Student

Another series of services is offered to New Jersey school districts and individual teachers to assist them in introducting their students to technology and related social issues. These activities include:

A. A series of NSF sponsored summer programs for high school teachers and the newsletter, Resource Line, which is provided for those who have taken part in the program.

B. The Energy/Environment Simulator, which is taken free of charge to schools for classes and auditorium programs.

C. Technology & Society in the Classroom, the newsletter for teachers developed through the Man & Technology Program. The first issue, available in Fall 1980, will be mailed to the 250 teachers who have sent in written requests for it (mostly English and social science teachers).

D. Availability of Instructional Modules for teachers on such varied topics as Urban Planning, Transportation, Energy,and Environment.

E. An NJIT's faculty member's work as consultant to the Newark Board of Education in a curriculum development capacity.

F. An NSF proposal pending which would provide for a series of workshops for teams of science and social science teachers from New Jersey schools to encourage them to develop interdisciplinary approaches to energy education.

As part of the Institute's Centennial observance, an effort is underway to coordinate and publicize these activities so that more teachers will take advantage of them.

## Center for Pre-College Programs

In-service educational opportunities for secondary school teachers of science is one of the concerns of the Foundation at NJIT, and it supports summer and semester courses for high school students and semester courses for teachers in environmental engineering. Physics, mathematics, chemistry, and electrical engineering courses have been offered in past years. So successful have been a variety of programs funded by the corporate sector through the Foundation, that they have been organized under a single rubric called the Center for Pre-College Programs. This Center offers a range of services directed toward interest in science and technology among primary and secondary school students in Newark and surrounding urban areas, and provides in-service training to secondary school teachers.

This past year, the Foundation secured corporate support for a Minority Engineering Scholarship Program to encourage the enrollment of minority youngsters of outstanding potential who may not meet the financial needs criteria of various government supported programs.

## Public Service Contributions in Research

Many of the Institute's research program funded by government and industry have significant public service components. These are in addition to the public service efforts associated with primary and secondary schools and their students.

Several dramatic examples of these activities relate to energy and environmental problems.

> NJIT's Center for Technology Assessment is assisting the State Department of Energy in obtaining information required in the State's request for funds from the Federal government to support the State's growing energy conservation program. As a direct result of the efforts of two NJIT faculty members (each with release time for public service) and the students and staff working under them in the energy-audit program, New Jersey is now in the forefront nationally in mounting an energy conservation program for public buildings.
>
> On a national and international level, another NJIT faculty member serves on a number of expert panels and committees established by the U.S. Department of Energy and by the International Energy Agency. At present this public service work is carried on without release time support from the Institute.
>
> In addition, the work of NJIT's air pollution monitoring laboratory continues to develop its public service role in the process of acquiring data related to its externally funded research activities.

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## Use of NJIT Facilities By External Groups

The Institute also has a carefully administered policy of making its physical facilities available to qualified government, professional association and industry-sponsored groups. The scope of this activity can be observed in the list of professional, governmental and community groups which employed NJIT facilities during the 1978-79 year.

### ORGANIZATIONS SERVED IN 1978-79

N.J. Urban History Association
N.J. Historical Society
Morris Area Girl Scout Council
Department of Higher Education
Environmental Protection Agency
Newark Housing Authority
Rutgers School of Nursing
Writer's Conference
N.J. Department of Institutions & Agencies
IEEE North Jersey Section
Robert Treat Council - Boy Scouts of America
N.J. Constructions Industry Society
Architects Explorer Post #450
Licensed Practical Nurse Association
City of Newark
NSF - GE - EXXON - Summer Program
Rutgers School of Business Administration
N.J. Society of Architects
Black Film Festival (jointly sponsored with Newark Museum and Newark Public Library)

#### Community Summer Recreation Program

Essex County Day Care Center
Friendly Fund Center
Newark Recreation Department
Progress in Action
Integrity House
Probation Fields of Newark
Latin American Cultural Council
Cross Counter
Victory House
Explorer Post #485
Bloomfield Boys Club
Newark Housing Authority
Western Electric children's recreation program
College of Medicine and Dentistry of New Jersey

## Specific Objectives and Plans for Implementation

As noted, NJIT is committed to expanding its public service activities in a coordinated pattern, so that these efforts can have the greatest impact. As the problems of urban America multiply and as the public's need for knowledge and assistance in technologically related areas expands into the 1980's,* NJIT will exert all available energy to fulfill this important phase of its mission. The following series of specific objectives and suggestions for implementation are proposed to encourage the achievement of various elements of the goal set forth above:

1. Encourage broader faculty and staff participation. Suggestions include the following:
   a. Seek funding for the establishment of an Annual Public Service Award to be given each year at Commencement along with the Van Houten award for teaching excellence.
   b. Seek funds to establish a series of small annual awards (2 or 3 of $250 to $500) for faculty and staff who involve themselves in public service activity without release time or other financial reward.

      Two new awards recognizing superior contributions to research and public service by members of the NJIT community were established in 1981. The awards, to be made by the Board of Overseers of The Foundation at NJIT, will be given for the first time at Commencement in May, 1981. The Harlan J. Perlis Research Award will go to an indiviual researcher or team of researchers for excellence in research at NJIT. The Foundation Overseers Public and Institute Service Award is open to all members of the NJIT community, faculty, administrators, staff and students. It will recognize outstanding service to the public by an indiviual or group. The relationship of the public service to the Institute's mission will be an important consideration. Each honor carries a citation and an award of $1,000.
   c. Offer recognition for individual efforts.
      (1) Include public service activities in annual staff evaluations and consider significant work in this area a factor in promotion/tenure deliberations.

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*National concern about this social need is addressed in a National Science Foundation Report to President Carter dated October 1980. Entitled "Science and Engineering Education for the 1980's and Beyond", the report proposes a "coordinated program which will (a) increase public awareness of the need for excellence in science and technology, and (b) help the schools fulfill their role in formal science and technology education."

(2) Highlight public service activities of a staff member in each issue of NJIT NEWS and consider such regular recognition in other internal and external Institute publications.

2. Increase Institute support services for public service projects. Suggestions:

   a. Continue to seek State funding to permit a greater amount of release time for faculty involvement in public service activities.

   b. Design a mechanism for improved Institute coordination of public service activities, as for example, through an Urban Center, now under active consideration.

   c. Foster informal networks by providing a central location for information storage on public service activities and presenting workshops for faculty/staff on areas in which it is hoped to develop public service activities. Possibilities include "Newark and NJIT" or "NJIT and New Jersey's High Schools."

   d. Create and maintain a central file listing public service activities which have been the subjects of proposals for grants. Cross-reference each subject with names of organizations which sponsor projects in the subject area, and with faculty members who have participated in related projects.

3. Enhance the visibility and reinforce the positive image of the Institute with regard to its public service mission. Suggestions:

   a. Publish a comprehensive research and public service directory. This project is currently in preparation for release during the Centennial Celebration.

   b. Focus attention of the public on types of service offered as well as audiences served, by publication of a public relations resource guide for citizens seeking assistance from NJIT. (This would be different from the directory in its concentration on types of activities rather than the individuals involved.)

4. Focus resources on issues related to the urban environment. Suggestions:

   a. Establish a special task force on urban involvement to discuss the relevant problems of the city and the Institute's role in solving them. This might involve simply reconstituting the present ad hoc committee on a more permanent basis.

b. Concentrate efforts in this special direction by granting a greater percentage of whatever release time may be available to this area of concern.

c. Seek special funding from the State and elsewhere to provide mini-grants for pilot research and public service projects for faculty interested in developing new interests in urban related areas.

d. In addition, continue to emphasize (with release time and other assistance) research and public service efforts already under way which relate to (or can be re-focused to relate to) the goal of improving the urban environment.

5. Take the lead in the Newark community by considering establishment with Rutgers-Newark, Essex County College, CMDNJ, and Seton Hall Law School a committee to work towards the goal of serving the community, without overlapping or repeating similar programs. Such cooperation should foster now and more effective public service activities.

Several of these suggestions are presently in the process of implementation.

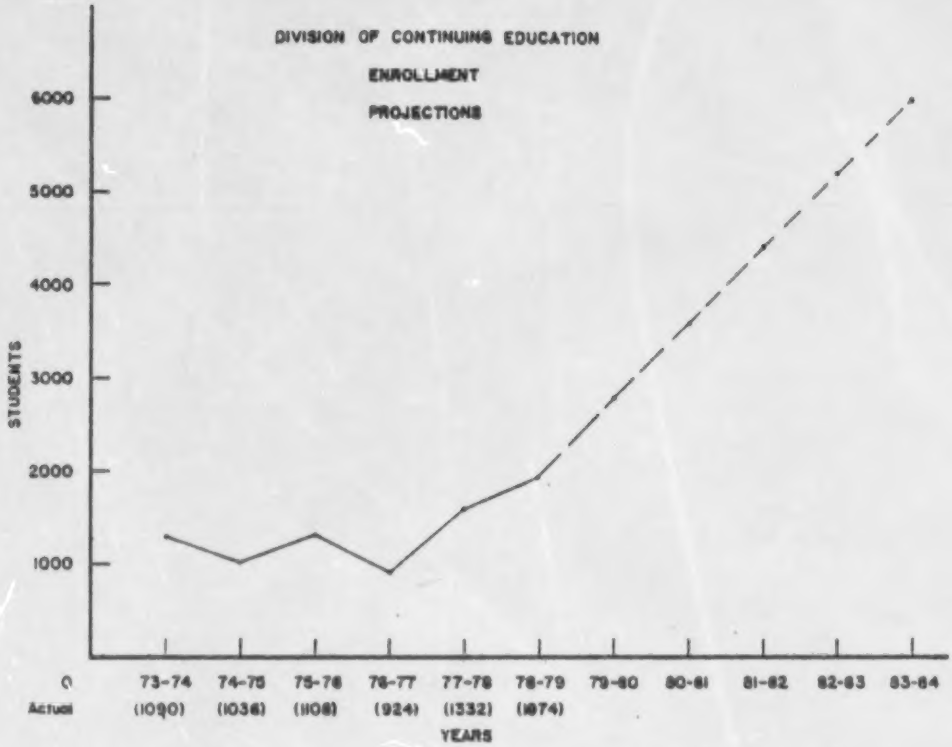
The Institute budget formula, as it relates to NJIT, does not include a Public Service "Add-on". The Institute provides services through release time funded out of its annual operating budget. The Proposal for Modification of Funding Formula submitted to the Department of Higher Education in June 1979, noted that an equivalent of 3% of the faculty lines would provide an initial basis for funding this aspect of the Public Service Operations.

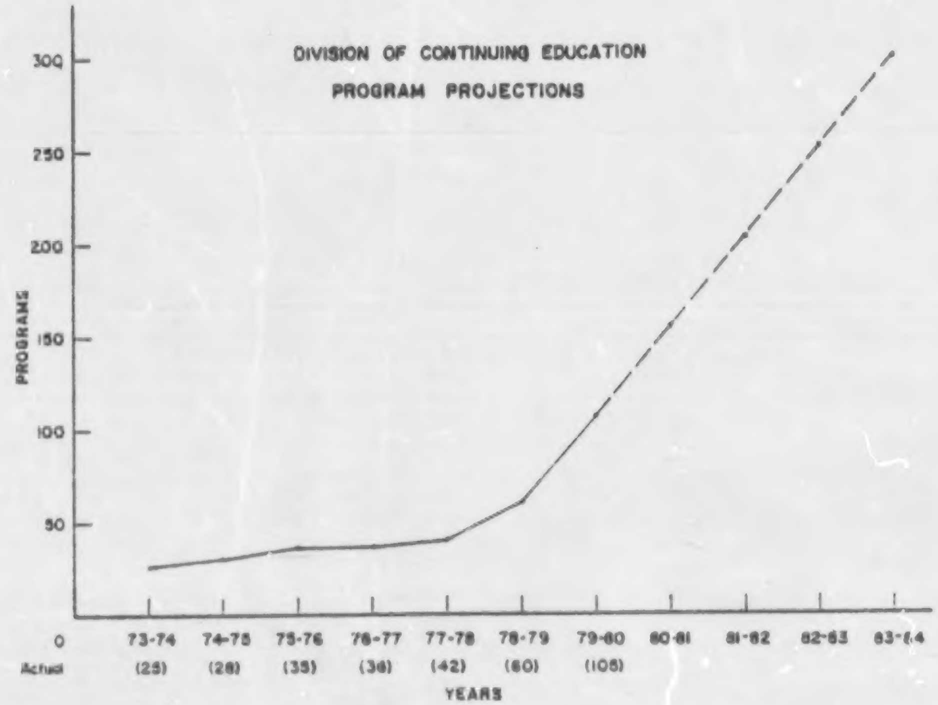
The Institute's budget submission for FY82 requests that the equivalent of 3% of the faculty lines, exclusive of support factors, be utilized to fund continued Public Service activities.

## 7.3 CONTINUING EDUCATION

In keeping with its role as an urban technological university, NJIT has begun a major expansion of its programs and services in continuing technological education. The central unit to carry out this expanded effort is the Division of Continuing Education.

The Division's primary concern is employed professional persons--individuals who need to know the latest development in their area of specialization. These persons welcome opportunities to interact with other professionals to exchange ideas on how to get specific technical information. The programs offered by the Division of Continuing Education are designed to facilitate this type of educational experience.


DIVISION OF CONTINUING EDUCATION
ENROLLMENT
PROJECTIONS
STUDENTS
6000
5000
4000
3000
2000
1000
0
Actual
73-74 (1090)
74-75 (1036)
75-76 (1108)
76-77 (924)
77-78 (1332)
78-79 (1874)
79-80
80-81
81-82
82-83
83-84
YEARS


DIVISION OF CONTINUING EDUCATION
PROGRAM PROJECTIONS
PROGRAMS
300
250
200
150
100
50
0
Actual
73-74 (25)
74-75 (28)
75-76 (35)
76-77 (36)
77-78 (42)
78-79 (60)
79-80 (105)
80-81
81-82
82-83
83-84
YEARS

The courses carry no credit and can be taken individually or in any combination without the need for matriculation. As a recognition of participation and completion, the Division awards CEU's (Continuing Education Units).

Programs are offered both on-campus and off-campus in the form of workshops, seminars, conferences, individual courses, and in-house programs for industry. The programs range from one-day seminars to weekly evening courses of semester length held on-campus, at off-campus sites utilizing industrial facilities, and in meeting rooms at conveniently located motels and hotels throughout the State of New Jersey.

Development of the Institute's role in continuing education, called for in its Master Plan, Phase I, has begun with the reorganization of the Division, additional staff, and a significant increase in programs, enrollments and revenues as shown in the graphs on the next page and in Appendix H, page H-12.

Current plans for further development include the following:

1. A campaign, executed in close cooperation with the Development Office, the Placement Office, and the Foundation, will be initiated to augment the already successful in-house industry programs of continuing education. Several corporations have so far been identified for visitations and presentations.

2. A major goal will be to sustain the 1979-80 enrollment rate of growth with an anticipated enrollment of 6,500 in 1983-84, an increase of 200% and anticipated gross revenues of $1,000,000, an increase of 180%. See projection, page H-12. These increases will be achieved through an intensive, organized marketing effort. To date, the marketing strategy has focused on the purchase of mailing lists from professional list sellers to promote programs with brochures. To complete the reorganization of the Division the addition of an Assistant Director for Marketing is planned.

3. Consideration will be given to the development of a professional continuing education center, as program growth occurs and as possible additional missions emerge for the Division. In addition to the normal activities which might occur at such a center, its development as a non-traditional, community-oriented facility will be explored in connection with the urban public services activities discussed in the preceding section.

4. The Division staff has begun to be significantly active in national professional organizations concerned with continuing higher education. The goal is to have the Institute play a leadership role in continuing higher education at the national level.

5. On the basis of prelimary studies it is proposed to expand programs to include alternative delivery systems, e.g. media based continuing engineering education courses.

6. It is proposed to introduce computer capabilities in office management and instruction, e.g. use of computers by participants in their homes.

## Funding

There is a growing awareness on the part of employer and employees of the need for commitment to continuing professional education, which results in increased enrollments. However, enrollment potential will not be reached until an increased number of specialized courses are offered at convenient times and locations for students having various academic backgrounds and work experience.

For FY82, the Institute's projected Continuing Education Budget is $600,000, of which $548,000 (91%), will be supported by the fees charged for the courses. The Institute is requesting State support totaling $52,000 (9%) to fund the remaining programs.

The following offerings, all of which are in areas of Public Service, are proposed as appropriate for State support:

> New Jersey Writers Conference: This program is designed to expose would-be New Jersey authors and successful writers in the field through a series of workshops, seminars, and discussions. An added feature is a three-category (grammar school, high school and post-secondary) science fiction and poetry contest.
>
> Mini-Courses: Two day-long sessions are designed for high school juniors and seniors interested in learning about technology in today's world.

OSHA Training Courses: This series of courses is designed to encourage voluntary compliance among New Jersey employers with the Occupational Safety and Health Act of 1970.

Neighborhood Groups Training Program: This series of courses includes sessions on community planning, financial management, design of needs assessment, grant writing development, survey methodology, graphic presentation, and other topics required for this para-professional training. Course participants will be neighborhood groups and the program would be co-sponsored with the New Jersey School of Architecture, HUD Neighborhood Development Program, NJIT faculty members, and business groups within the Metro-Newark area.

Training Technical Professionals in Community Projects: Preliminary discussions are under way for the training of technical professionals to work on community projects, with emphasis on the translation of knowledge into layman's language.

Architectural Curriculum Training For Elementary Teachers: A successful outreach program with elementary schools has been conducted by the School of Architecture. Discussions have now begun with NJIT faculty concerning the provision of architectural curriculum training for elementary school teachers.

Safety Promotional Program: Continuation of a jointly-sponsored program with the New Jersey Department of Transportation and a Civil Engineering faculty member to promote safety concepts, and a program to review current legislation in the transportation field.

# CHAPTER VIII. INSTITUTE RESOURCES

The resources of any institution of higher education are, primarily, its teaching faculty, its non-teaching staff,and its physical facilities including land, buildings and equipment. NJIT faces a major challenge in matching these resources to the tasks to be accomplished as outlined in this Master Plan.

## 8.1 FACULTY

### Faculty Lines

The faculty is the keystone in fulfilling the Institute's diverse missions in instruction, research, and public service. It is of the utmost importance that the State funding formula provide a number of faculty budget lines appropriate to the Institute's mission, and array of programs and services. During 1979, the Institute submitted several reports and communications to the Department of Higher Education to document, as completely as possible, its position.

Discussions concerning the funding formula and the manner in which funds are generated have been underway for some time, and it is hoped that the results of these discussions will be satisfactory to the Institute and the State.

Development of an improved system of internal allocation of faculty positions to departments is a major goal of the Institute. Any such revision must be approached carefully. It must be sensitive to traditions that have led to NJIT's reputation as a student-centered teaching institution. At the same time, a system of allocating faculty positions must be responsive to new challenges in research and public service.

It is a most difficult task to develop a system of allocating faculty positions that is generally regarded as equitable and effective. A rationale that may be attractive to one institution may prove inadequate for another. Similarly, it is doubtful that any simple formula (such as one based only on State-defined equalized credit hours) could prove equitable for all departments or schools within any institution. However, NJIT's continuing planning process now underway should produce a flexible system which reflects a department's or school's role in fulfilling the Institute's mission which is consistant with the DHE Statewide Plan for Higher Education in New Jersey.

## Faculty Development

Regardless of the allocation system, it is unlikely that significant numbers of additional faculty lines will be authorized in the next decade. Most new faculty will replace either young untenured faculty who leave for other positions, or much older tenured faculty who retire. The Institute must therefore meet the needs of changing technological and societal demands in its educational programs with, for the most part, its current faculty. This faculty must continue to demonstrate a level of professional excellence and must be capable of responding to changes in its students and in the content of its programs. The Institute encourages professional growth and development through judicious use of approaches such as sabbatical leaves for professional renewal and research, attendance by faculty at short courses, industrial and government leaves for faculty, and participation in professional society activities. The Institute expects to increase incrementally the modest funding which it has been able to allocate to these activities.

The approaches cited above and the overall objective of furthering faculty development are by no means peripheral to the comprehensive program of the Institute. Faculty development is integral with the objective of enhancing the quality of instruction and research within a technological university. The Phase I Institute Master Plan reaffirms existing policies with respect to faculty development but calls upon the Institute to develop an expanded and more ambitious program: to maintain faculty "currency in a present viable field or subject of specialized interest"; to facilitate the entry into new fields which "may be associated with new subject areas or new teaching techniques or may be the result of new interests on the part of the individual"; and to "upgrade teaching effectiveness with the major objective of providing information that will be diagnostic in character" and measure the effectiveness of new teaching formats and methods.

In the planning for faculty development, important factors to be considered are distribution of faculty by rank, tenure, highest earned degree and age. These data are presented in Appendix I, based on the 262 full-time instructional faculty in the Fall semester of the 1979-1980 academic year.

It is of interest to note that NJIT has about the same percentage of full-time instructing staff (65%) in the upper ranks as compared with all U.S. public universities (66%). Within the ranks of assistant and associate professor, NJIT's tenured percentage equals those of all U.S. public universities.

Sixty-eight percent of the full-time instructional staff have earned the appropriate terminal degree in the relevant discipline, and all but one per cent have at least the relevant Masters degree. For architects the Masters is considered the terminal degree but it is assumed that for other NJIT staff the terminal degree is the doctorate.

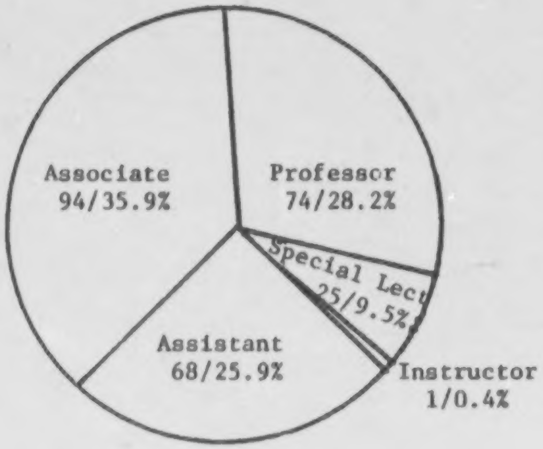
## 8.2 STAFF NEEDS

In meeting its educational, research and public service responsibilities NJIT employs some 294 staff members in addition to its faculty and student employees. (See table in Appendix I).

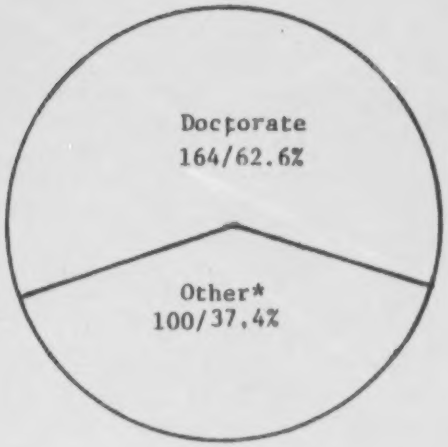
The expansion of undergraduate options, research programs, student services of various kinds, and campus and building facilities resulting from NJIT's broadened mission during the past decade, have required a larger array of specialized talent. Similarily, external reporting and compliance

# NJIT FACULTY PROFILE: 1979-1980

N = 262



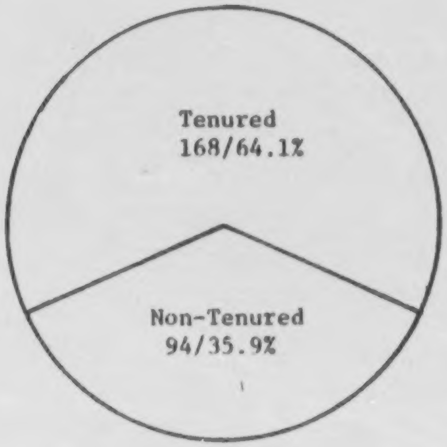
DISTRIBUTION OF ACADEMIC RANK



ACADEMIC DEGREE ACHIEVED

68% - Appropriate Terminal Degree

*Masters - 95/36.3%
Bachelors - 3/1.2%



ACADEMIC TENURE GRANTED

requirements mandated by State and Federal law have placed an increasing burden on support and administrative personnel.

A number of personnel planning factors must be considered in order to provide an appropriate level of support for academic programs. For example, a degree granting department developing a new graduate level program utilizing extensive laboratory and research facilities may require a different support ratio as compared with an undergraduate program dealing primarily in lower division, non-laboratory courses. Student enrollment trends affect not only manpower planning for faculty staffing but support personnel as well. Recent program developments in Architecture and Computer Science have not only mandated additional traditional support staff but for those with a level of skills and professional training heretofore not required in support staffing. The recent opening of NJIT's first dormitory has required increases in support ranging from extended library and food service hours to augmented NJIT police and guard duty.

Without destroying the traditional informal atmosphere which serves as a major motivating force in an academic environment, the Institute must encourage continued professional growth among support personnel, much as it does for faculty. All employees play a role in the overall mission of the Institute and adequate incentives must be developed to maintain the high standards of required work performance. Activities such as tuition remission, career related training and career counseling are being expanded.

As a step toward this objective, a comprehensive staff tuition remission policy has been adopted by the Board of Trustees and is being implemented with modest budget allocations to the Institute's departments.

Just as the faculty and professional administrative staff must participate in developmental programs to remain current with changes in the field, a parallel need exists for supporting staff. Increased resources should be dedicated to provide expanded opportunities for support personnel to keep them current with changes in their respective areas of responsibility. The Institute should seek to develop appropriate opportunities for essential support level staff to have a voice in decision making at the operational level. A possible model for consideration is the labor/management meeting concept currently being utilized with organized blue collar employees.

While effective communications is an important element in establishing a positive climate for good employee relations, additional programs must be developed in the areas of supervisory relationships training to assist first-line supervisors to deal more effectively with contemporary employer-employee situations. Specific programs dealing with union contract administration and problems in supervising the contemporary work force must be developed. Programs prepared by departments such as Labor Relations would be expanded to include seminars and workshops presented by organizations outside the Institute.

The Institute must continue to expand its present effort to eliminate "dead-end" jobs for its support personnel, and to provide them with a level of support for development activities which is consistent with their career path at the Institute.

## 8.3. ACADEMIC SERVICE FACILITIES

### Laboratory Modernization

Educational excellence of a technological university requires a continuing and effective effort to maintain its instructional laboratories in modern and well-equipped condition. Laboratory instruction is a major component in the quality of professional education in technical fields, and by their very nature, laboratory facilities are costly indeed.

In the past, NJIT adopted an overly conservative approach to laboratory expenditures. As a result, with few exceptions, the laboratories are not up-to-date, lagging behind those of many comparable institutions. Significant expenditures for laboratories have occurred mainly when new buildings were being built or renovated. Examples include the Faculty Memorial Hall in 1966, housing Electrical Engineering; Tiernan Hall in 1972, housing Chemical Engineering and Chemistry; and the recently acquired Bleeker building at 200 Central Avenue for Mechanical Engineering.

With the accelerating rate of technological development this country is experiencing, these periodic attempts to update NJIT science and technology laboratories are no longer adequate for maintaining a modern state-of-the-art laboratory system. Thus, an important Institute goal is to modernize the laboratories and then, with appropriate annual expenditures, maintain and update them as a continuing process and at a level which reflects the state of the art in each field.

The Institute plans to continue a major modernization program for its instructional laboratories, a program that will allow new methods of instruction to be used, especially in the upper-division design laboratories. To update all the Institute programs will require the purchase of modern equipment for undergraduate and graduate laboratory courses as well as that required for project and thesis work.

An assessment of funds necessary to modernize laboratories over a five year period has been made by each department of instruction. The total cost of needed new undergraduate laboratory equipment at current prices is 1.5 to 2.0 million dollars. Acquisition of this equipment is considered the first priority in academic needs for additional resources over this five year period.

In FY79, a modest start on the laboratory modernization program was made with the expenditure of $185,000. Typical of the acquisitions was a numerical control machine which will be used jointly by the Mechanical Engineering, Industrial and Management Engineering and Bachelor of Science in Engineering technology programs. Other purchases include a digital control system to provide "hands-on" experience for Chemical Engineering students in the process field.

NJIT continued the laboratory modernization program with $265,000 included in its Academic Development/Program Improvement Plan for FY80. A major portion of these funds was used to upgrade existing laboratories. For example, the Computer and Information Science Department purchased additional equipment for its microprocessor laboratory; the Physics Department added equipment to its freshman laboratories; and the Civil and

Environmental Engineering Department combined these funds with a National Science Foundation instructional and scientific equipment grant to purchase equipment for the Soils Laboratory and also purchased instruments for the new surveying program. The Chemistry Department used its funds to replace obsolete and broken instruments, to obtain some needed key safety items for the undergraduate laboratories, and to obtain additional equipment which is in heavy demand in the freshman laboratories.

It was planned to continue the laboratory modernization program with $250,000 included in the NJIT Academic Development/Program Improvement Plans for FY81. This figure was reduced to $200,000 in the administration's final recommendation. With this in mind, it is proposed that $275,000 be expended in FY82. Typical of the application of these funds are the plans of the Chemistry and Electrical Engineering Departments. Chemistry plans to replace nonrepairable equipment, to augment the equipment required in the laboratories with large student enrollment, and to obtain new equipment and instruments necessary to offer state-of-the-art experiments in the undergraduate laboratories. The Electrical Engineering Department plans include: (1) the continuation of the upgrade of specialized equipment needed in the systems laboratories, (2) the replacement of obsolete recorders and plotters used in the core laboratories, (3) modernization and standardization of laboratory equipment in the service courses for Mechanical and Industrial Engineering students, and (4) general improvement of the Technology and Microprocessor Laboratories.

## Library and Instructional Media Center

The Library and the Instructional Media Center are combined as a single operating unit in many colleges and universities. At NJIT they are separate, an arrangement having both advantages and disadvantages, and which will be the subject of further study.

Plans are being formulated to assure greater involvement of faculty in the planning and evaluation of library and media center activities, and to achieve greater collaboration between the two, especially in areas of new teaching methods involving media resources.

To advance this goal a reordering of the standing Institute committees on library and media activities was discussed, with a recommendation to combine the two and to encourage a more dynamic role. The result might be termed a Learning Resource Council with representatives from each major department and with responsibility to interact with departments on a regular basis.

Owing to budgetary limitations, the library has for some time curtailed severely its purchases of books and periodicals. This has meant that service to the students and faculty has suffered because some of the materials needed for assignments and research were not available. Therefore, it is proposed that the Institute augment the regular budget for technical, scientific and architectural books and that additional funds be allocated for maintaining periodical subscriptions in these fields over the next two fiscal years.

Inadequate funding has also led to postponing the binding of many loose issues of periodicals. This has resulted in the loss of several issues and in the expenditure for replacements. It is planned to allocate additional funds to the library's binding account so that more volumes may be permanently bound this year and next.

The library's proposal includes funding to allow it to take two additional steps toward the automation of manual procedures with the objective of improving efficiency and service. Included will be the first-year costs of the planned computerized circulation system which will be a joint venture with the State Colleges and the College of Medicine and Dentistry. An additional sum will be used for equipment, training and other start-up costs for an automated literature-retrieval service that is long overdue at NJIT.

Included within the development budget will be an allocation to increase the library's book stack capacity during FY80-81 and FY81-82 by approximately 11,150 and 18,700 books respectively. Unfortunately, as stacks are added, the number of carrels will necessarily be reduced unless additional space can be obtained. An architectural design to expand the library into the Humanities portion of the building has been prepared and is under consideration together with other alternatives.

## LIBRARY ACADEMIC DEVELOPMENT FUND BUDGET

| | 1980-1981 | 1981-1982 |
|---|---|---|
| Book purchases | $15,000 | $15,000 |
| Periodical subscriptions | 15,000 | 15,000 |
| Peridical binding | 5,000 | 5,000 |
| Computerized circulation system Automated literature audio-visual material retrieval and interlibrary loans systems | 30,000 | 35,000 |
| Shelving | 17,000 | 30,000 |
| Total | $82,000 | $100,000 |

The library extension maintained in the School of Architecture has developed a unique slide collection supportive of the architecture instructional program. As this collection has grown, access, filing and retrieval have become more complex. A proposal has been submitted to the National Endowment for the Humanities for the support of the development of an adequate and modern retrieval system for the slide collection.

The Institute Instructional Media Center (IMC) provides an ever expanding array of services to an increasingly more diversified student body. The Center currently functions with one full-time professional, one technician, and several student aides. It is proposed to enhance the usefulness of the Center by increasing expenditure levels in FY81 for materials and student assistants. Additional space has also been allocated to the Media Center.

Academic Development Funds for FY81 and FY82 will be used to enhance the services of the Instructional Media Center (IMC) in the areas of classroom delivery of Audio-Visual (A-V) materials, procurement of A-V materials and expansion and enhancement of learning centers on campus.

This will be accomplished through the purchase of A-V equipment, modifications to classrooms to allow the use of A-V equipment and where possible the permanent installation of A-V equipment in suitable classrooms.

With the assistance of interested faculty members the Media Center will conduct searches for and evaluation of commercially available A-V materials in the area of Engineering Physics and Architecture. Suitable materials will be purchased with Academic Development Funds for use in classrooms and learning centers. In areas where A-V materials are not commercially available the Center will continue to improve its in-house production capabilities. This will be accomplished through the purchase of raw materials and where necessary the purchase of equipment needed to support this production activity.

Audio Visual equipment and specialized furniture will be purchased to increase the capabilities of existing and planned satelite learning centers on campus. Through the centralized purchasing of A-V equipment for various learning centers the IMC hopes to maintain uniformity and allow for future merging of learning centers to optimize the use of staff, equipment and facilities.

One of the fastest growing areas of Audio Visual production and use at NJIT is that of color video tape. Over the past five years the Instructional Media Center has seen the demand for color video tape equipment and facilities rise by nearly 500%. In addition some courses offered in the planned extension activities will require the use of video taped course material.

Although the IMC has attempted to meet demand through increased equipment purchases it has been done at the expense of other areas of improvement. It is therefore proposed that additional Academic Development Funds be made available for the purpose of upgrading and maintaining video production and delivery capabilities. Because of the extraordinary cost involved in the purchase and maintenance of video equipment, these additional funds should continue to be made available over the next three years at a level of $25,000. per year. Beyond this three-year period funds should be budgeted for continued maintenance of effort at a level of $10,000 per year.

These funds would enable the IMC to expand and upgrade present video capabilities in such areas as post-production editing, duplication of video tapes while maintaining image quality, improved titles and graphics in less time and ultimately with less cost, improved image quality during initial recording, and an overall increase in efficiency for the entire video operation.

## Computer Services

As a culmination of a needs analysis begun in 1976, the Univac Series 70/3 computer at the Institute was, in 1980, replaced by a new Univac 90/80 computing configuration to satisfy Institute academic and administrative needs and to serve as the Northern Node of the New Jersey Educational Computing Network (NJECN).

In fulfillment of today's expanding needs for computing, the 90/80-3 has been configured with two million bytes of main memory and 600 million bytes of on-line storage. The system is designed to support over 50 interactive terminals concurrently with batch processing. A portion of the capacity will be dedicated to used by NJECN. During FY81, the first year of its operation, 10 ports will be allocated to the Network. With this configuration the Institute is provided with an increase in its computing capabilities estimated at between three- and fourfold.

The new computer employs an operating system which is upward compatible from the system currently in use. This compatibility is providing a smooth transition for academic and administrative users.

Computer utilization has historically shown a 60/40 distribution in the ratio of academic to administrative computing at the Institute. Growth patterns projected during the development of the Request for Proposal show that computing demand will grow by a factor of 2.5 for academic computing and 1.5 for administrative computing, changing the overall distribution to a 70/30 mix. Particularly noteworthy is the projected sixfold increase in academic timesharing at the Institute which will come about owing to an increased number of available terminals and to the increased computing power available to timesharing users.

After the first year of operation, analysis of utilization data will enable a refinement of and possibly revisions to these projections. The Institute has been advised by a consultant that its projections are modest compared with growth experienced at other technological institutions.

A new computer center has been constructed to house the computer and staff and more adequately accommodate users of the computer. The center and its adjacent ancillary demonstration classroom and graphics laboratory areas will ultimately encompass the entire 15000 (gross) square foot area of the second floor of Colton Hall.

Planning for completion of the remaining phases of the computer center will continue. Although the computer machine room and basic support areas have been completed, areas remaining to be renovated include those for academic support and offices, the demonstration classroom and the area for the graphics laboratory (currently located in temporary quarters in another academic building).

The area of computer funding is addressed in the ongoing formula review and has previously been included in "above-formula" requests. The Institute is requesting an adjustment in the General Support Formula to reflect the increased basic costs of computing.

## 8.4 BUILDINGS -- RENOVATION AND MAINTENANCE

### Building Utilization

Ongoing implementation of the plans discussed in the NJIT Master Plan Phase I, particularly with respect to the move of the Mechanical Engineering Department to the Bleeker building and that of Computer Services to the second floor of Colton Hall, has resulted in some changes in the utilization of older buildings. Also, the new dormitory has been added to the roster.

The statistics displayed in the tables of Appendix H show the gross area (based on outside wall to outside wall dimensions), the area in square feet assignable for educational use, and breakdown of this area in five categories: class and lecture rooms, laboratories and architecture studios, educational services and "other". Also tabulated are breakdowns of assignable areas by academic department and by adminstrative and service units.

### Mechanical Engineering Building

Studies have affirmed the Mechanical Engineering project as a first priority. After the basic structure and land were acquired for $250,000 through Alumni Association funding, the initial phase of construction and rehabilitation was accomplished through capital funding in the amount of $500,000 by the State and $100,000 by the Foundation. The next phase of this project is now the highest institutional priority. The implications of this phase to the Institute cannot be overstated.

Plans for the re-allocation of space becoming available as the Mechanical Engineering Department moves into the renovated building were discussed in the NJIT Master Plan, Phase I.

### Deferred Maintenance and Access for the Handicapped

In the Spring of 1979, the Institute initiated a comprehensive facilities reassessment program for the campus. Supervision of the program is assigned to the Director of Physical Plant with the following objectives:

1. To determine major items of deferred maintenance, to approximate costs and urgency, and to develop a timetable for correction.

2. To study available space and its usage related to compliance with applicable legislation concerning access for the handicapped, and energy conservation.

The two-page chart "Deferred Maintenance" in Appendix H summarizes the current list of major projects. From the $2 million appropriation in the Higher Education FY80 Capital Budget, the Institute received $90,000 for a ventilation system in Tiernan Hall, and initial work for access to the handicapped. This and other projects of highest priority for which funds have been requested for FY81 are listed in the table of the Appendix H.

## CHAPTER IX CAMPUS MASTER PLAN

### 9.1 INTRODUCTION

In undertaking to respond to the physical facilities needs expressed in the NJIT Master Plan, Phase I, of June, 1978, the Institute has initiated a long-range plan for campus development. Recognizing that this program must be implemented in a time of rising costs and restricted revenues, and in a difficult urban context, the Institute commissioned a study* of the opportunities and constraints affecting the physical development of its campus and contiguous areas as required for the fulfillment of its educational mission, as illustrated on the following diagrams. The first figure shows the planning process and the second illustrates component modules selected individually for execution. Alternatives are indicated for optimum growth and steady state conditions as dictated by funding and enrollments. Studies which have been completed are indicated by the shaded areas.

Sporadic growth and changing concepts of the Institute's mission over nearly 100 years have produced the present campus shown in Appendix H on page H-4, already slightly larger than that of 1978. Land utilization is also tabulated on page H-5. However, this is a campus with certain functional and aesthetic problems, and one which lacks "a sense of place." Achieving order and identity require more than a commitment to sound planning and high architectural quality. The active participation of students, administrators, and faculty in programming and design must be facilitated. Cooperation with the City of Newark must be sought in the rationalization of traffic patterns, the possible creation of special zoning districts at the campus periphery, and the creation of physical links outward to other institutions and to the Central Business District.

The New Jersey Institute of Technology is one of four major public educational institutions built on urban renewal land in central Newark. Many planning studies have called these projects "Newark's strongest hope for revitalization." Much more can still be done -- to the benefit of NJIT as well as to the city and its people.

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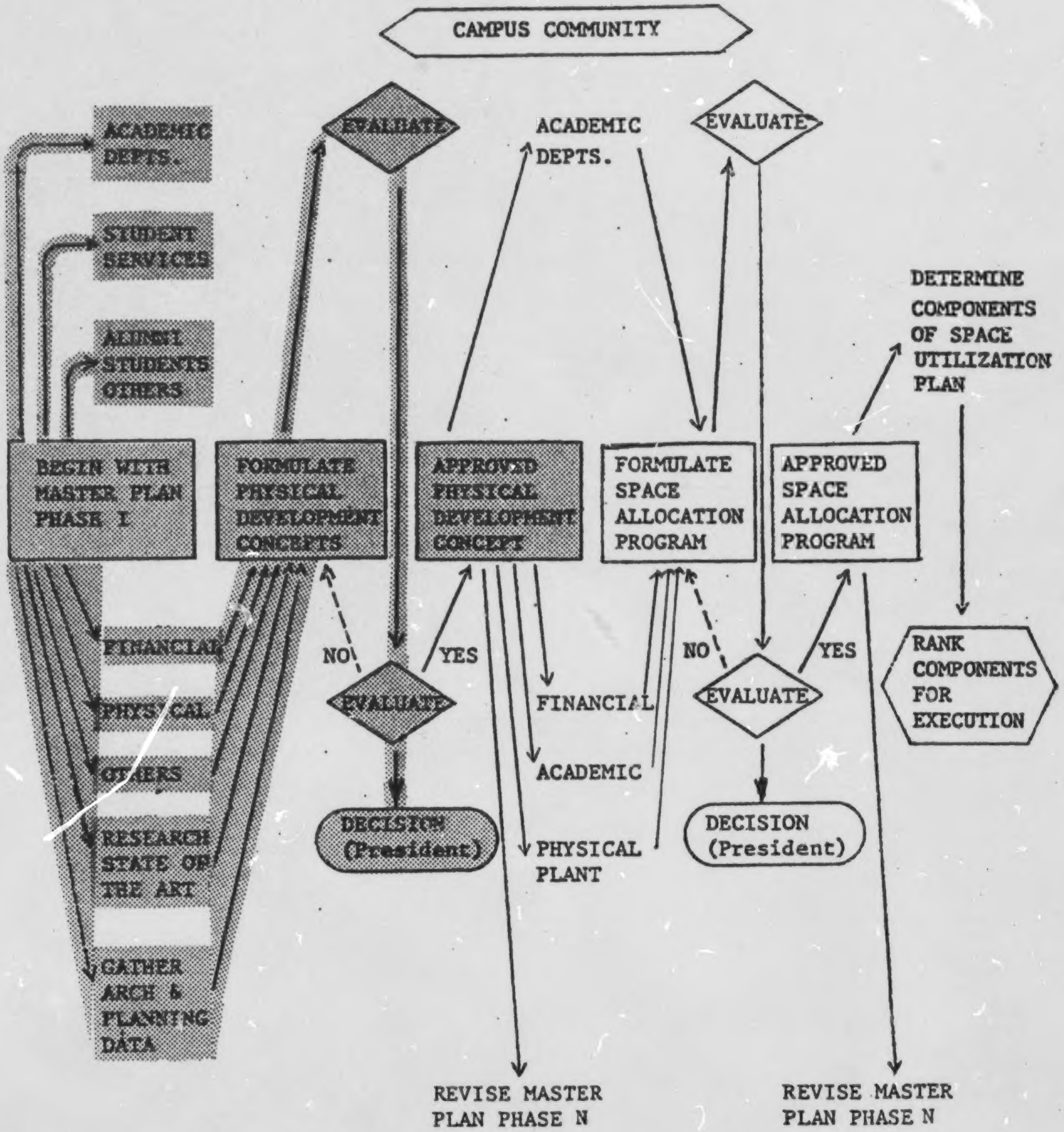
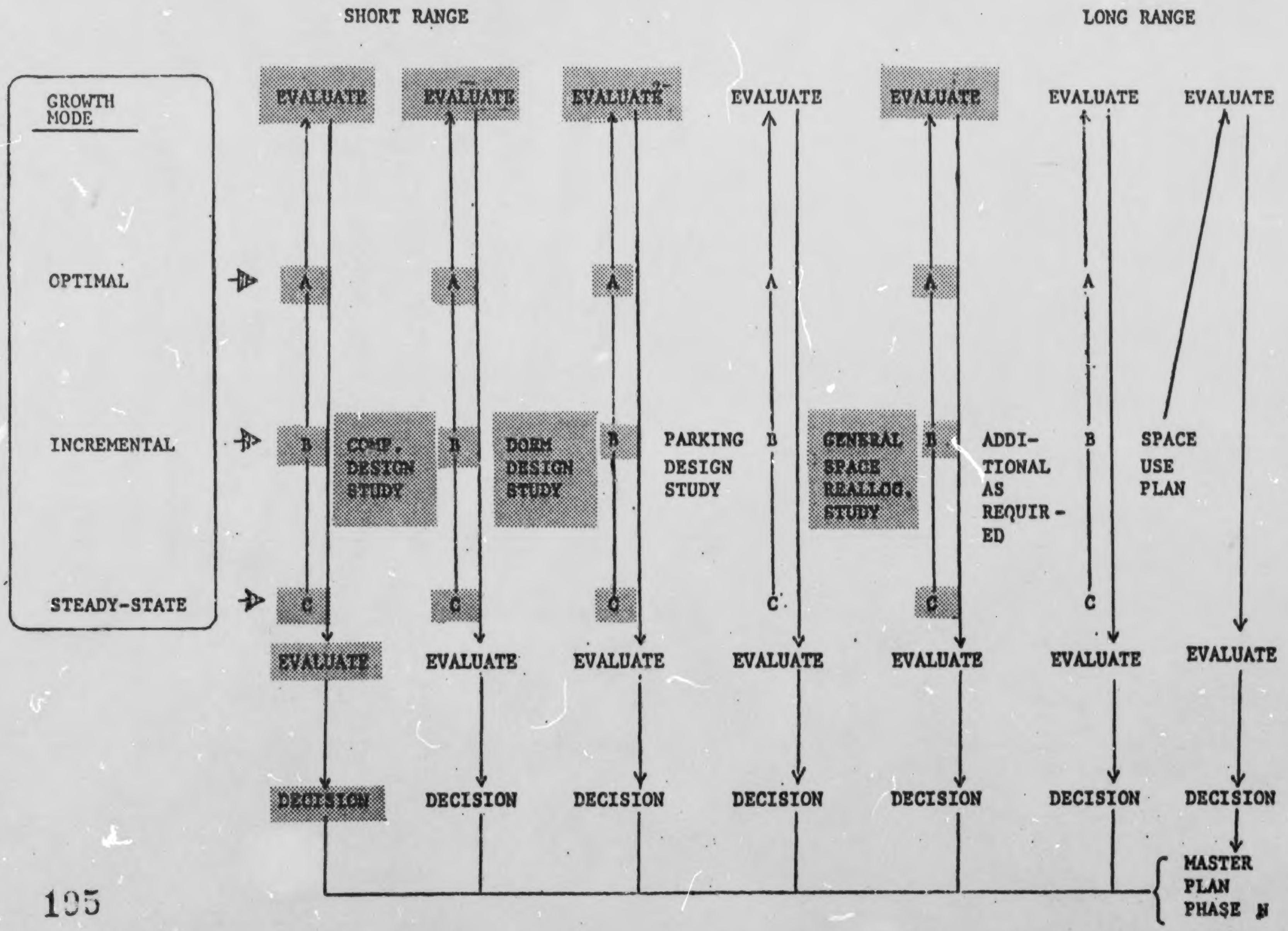
*New Jersey Institute of Technology Facilities Master Plan, Phase I, Concepts, Opportunities, Constraints", D. Gibson and R. Hatch, David Gibson & Associates, October 22, 1979.

## THE PLANNING PROCESS


CAMPUS COMMUNITY
EVALUATE
ACADEMIC DEPTS.
EVALUATE
ACADEMIC DEPTS.
STUDENT SERVICES
ALUMNI STUDENTS OTHERS
DETERMINE COMPONENTS OF SPACE UTILIZATION PLAN
BEGIN WITH MASTER PLAN PHASE I
FORMULATE PHYSICAL DEVELOPMENT CONCEPTS
APPROVED PHYSICAL DEVELOPMENT CONCEPT
FORMULATE SPACE ALLOCATION PROGRAM
APPROVED SPACE ALLOCATION PROGRAM
NO
YES
NO
YES
FINANCIAL
PHYSICAL
OTHERS
RESEARCH STATE OF THE ART
GATHER ARCH & PLANNING DATA
EVALUATE
DECISION (President)
FINANCIAL
ACADEMIC
PHYSICAL PLANT
EVALUATE
DECISION (President)
RANK COMPONENTS FOR EXECUTION
REVISE MASTER PLAN PHASE N
REVISE MASTER PLAN PHASE N

# THE PLANNING PROCESS


SHORT RANGE
LONG RANGE
GROWTH MODE
OPTIMAL
INCREMENTAL
STEADY-STATE
EVALUATE
A
B
C
COMP. DESIGN STUDY
DORM DESIGN STUDY
PARKING DESIGN STUDY
GENERAL SPACE REALLOC. STUDY
ADDITIONAL AS REQUIRED
SPACE USE PLAN
DECISION
MASTER PLAN PHASE N

In recognition of the need for new research, instructional, and athletic facilities, the importance of improving linkages to neighboring institutions of higher education, and the practical and moral necessity of contributing to the revitalization of the area and the City of Newark, the first step is to establish reasonable boundaries within which campus expansion is feasible as needs arise and funds become available.

Such boundaries, as illustrated on the Concept Plan of the following page, contain sufficient additional land required for parking, housing, and additional building space. Also an additional athletic field is desirable as the present one is over-utilized.

## 9.2 INTERIOR SPACE REQUIREMENTS

### Building Utilization Study

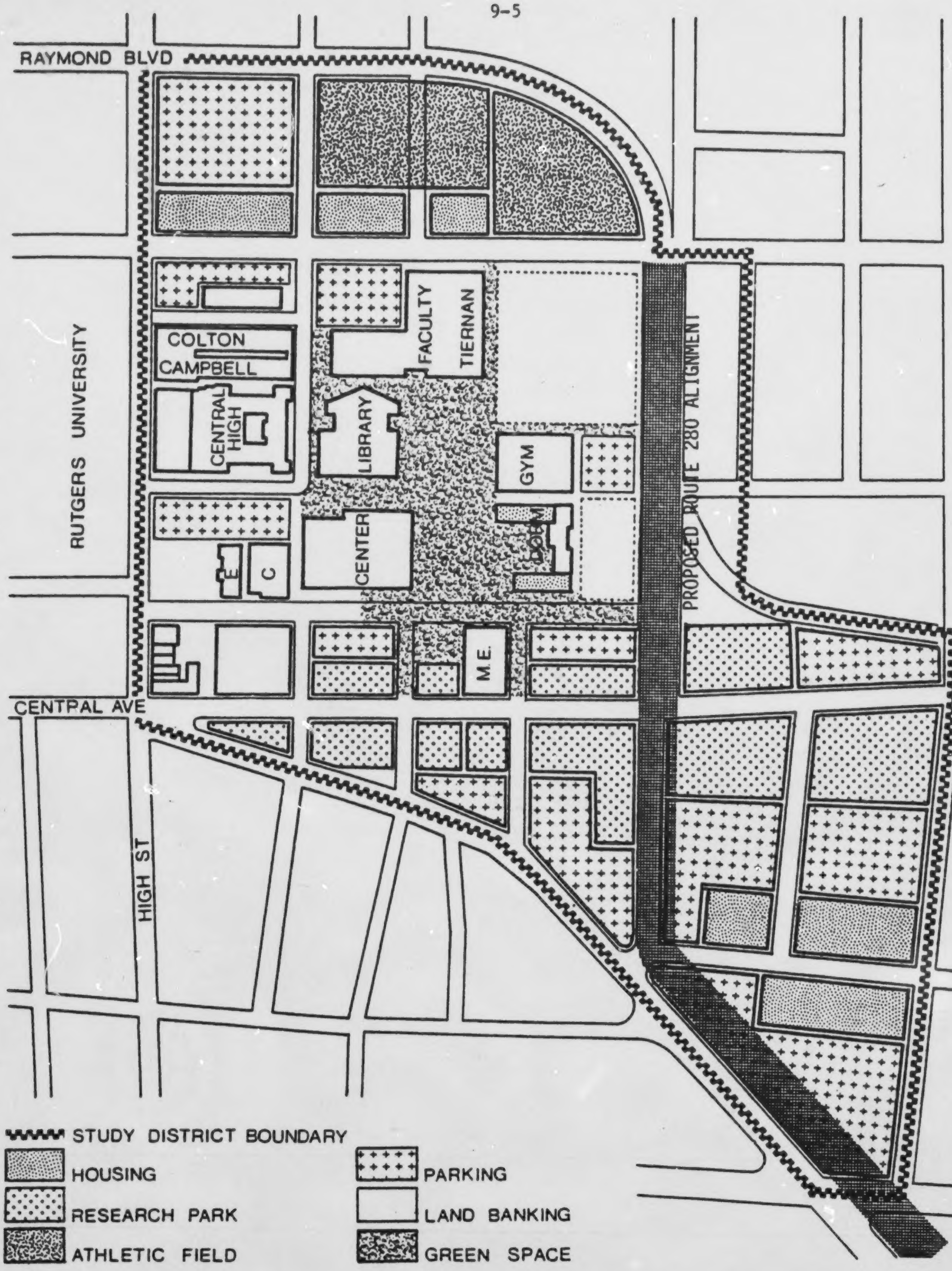
Ongoing implementation of the plans discussed in the NJIT Master Plan, Phase I, particularly with respect to the move of the Mechanical Engineering Department to the Bleeker building and that of Computer Services to the second floor of Colton Hall, has resulted in some changes in the utilization of older buildings. Also, the new dormitory has been added to the roster.

The statistics displayed in the tables of Appendix H show the gross area (based on outside wall to outside wall dimensions), the area in square feet assignable for educational use, the breakdown of this area in four categories: class and lecture rooms, laboratories and architectural studios, educational services, and "other". Also tabulated are breakdowns of assignable areas by academic department and by administrative and service units.

However, beyond these needs, the Master Plan, Phase I also pointed to the immediate need for additional space. As part of the previously discussed planning process studies have been completed to more specifically determine and justify space needs and prepare a physical development concept. This Building Utilization Study consists of three parts: survey, analysis and the development itself which sets forth facilities planning goals.

### Survey of Existing Conditions

A survey of all academic, student service, support and administrative departments occupying the Institute's approximately 750,000 square foot interior area has been completed. A set of 30 sheets of architectural drawings were prepared illustrating the layout of each floor of every


RAYMOND BLVD
RUTGERS UNIVERSITY
COLTON
CAMPBELL
CENTRAL HIGH
LIBRARY
FACULTY
TIERNAN
GYM
DORM
CENTER
E
C
M.E.
PROPOSED ROUTE 280 ALIGNMENT
CENTRAL AVE
HIGH ST
STUDY DISTRICT BOUNDARY
HOUSING
RESEARCH PARK
ATHLETIC FIELD
PARKING
LAND BANKING
GREEN SPACE

NJIT FACILITIES CONCEPT PLAN

DAVID GIBSON & ASSOCIATES
PRESERVATION • RESEARCH • PLANNING • DESIGN

Institute building. Spaces were examined room by room and inventoried to determine the following: (1) existing use, (2) type and condition of architectural finishes, (3) internal circulation relationships among division spaces and (4) type, condition and appropriateness of furnishings.

## Analysis

Following the compilation of survey data, an analysis of space use pattern was prepared which examined this information considering the following: (1) DHE facilities standards, (2) compliance of space with approved departmental needs, (3) interdepartmental circulation with reference to access, service and security, and (4) the suitability of the space for its present use.

## Physical Development Concepts

Based on the survey and analysis work outlined above, the following concepts are set forth as goals to which the space allocation/reallocation program addresses itself.

(1) Upgrade the facilities of those departments whose offices, laboratories and seminar areas do not presently conform to DHE standards. Presently a number of departments are housed in facilities where lacks of space, acoustic privacy, and security is detrimental to their mission; proposals for redesigned facilities will be developed to overcome these deficiencies. These department include CIS, OSS, Mathematics, Humanities, Financial Aid, and Special Services and involve work in Weston Hall, 2nd floor, and Cullimore Hall, 3rd, 4th, 5th and 6th floors.

Additionally, new offices will be proposed in upper areas of Cullimore, freeing lower floors for development of a more intensive use.

(2) Relocate classroom from upper floors to lower floors. Presently many classrooms are on the 4th, 5th and 6th floors of Cullimore, resulting in overloading of elevators, and excessive disturbance due to noise. Relocation of classroom facilities to the first three floors would reduce traffic in the upper stairs and would allow elevators to serve adequately the upper floors and improve access for handicapped persons. These improvements are proposed for the 1st and 3rd floors of Cullimore Hall.

(3) Construct new classrooms in a variety of sizes with partitions that could be relocated over the years to respond to changing class sizes and teaching methods. Presently most classrooms seat approximately 35 persons and as the need for larger lecture classes as well as small seminar/recitation classes exists, greater variety and flexibility are needed, also proposed for the first and third floors of Cullimore Hall.

(4) Relocate service functions to less heavily used space. Currently, service departments are on the main floor of buildings, using what could be valuable teaching space. Relocation would increase the amount of space available to service departments while allowing main floor areas to be used for large, heavily used classrooms.

New facilities are proposed for the basement level of Cullimore and Eberhardt Halls with the opening of a new passage-way connecting the two buildings on this level.

(5) Create a central receiving area to permit vendors to deliver materials to a secure inventory facility. An underused existing receiving area in Tiernan Hall is proposed to undergo minor modification to serve this new Institute-wide use.

(6) Relocate components of split departments to unify facilities. The Physics Department has offices, laboratories, and classrooms in separate buildings. These configuarations create circulation, security and communication problems and inhibit efficiency. It is proposed to study the relocation of certain components and create a contiguous facility for such departments.

(7) Consolidate Dining Facilities. Food is presently served at two locations in two buildings, necessitating movement of materials from the main kitchen to the satellite faculty-staff cafeteria. Relocation of the latter to an area adjoining the main kitchen would increase efficiency and improve the economy of food service as well as make valuable space available for much needed classroom use and require very little expenditure for additional food service equipment.

(8) Enlarge library stack space. The library has reached its limits in book and peridical storage space, as well as study space, and has no room for expanded services. Additional space must be made available in the present library building by relocating classroom space. As part of these improvements the offices and storage facilities for the Archives and Institutional Research would also be located in the Library, providing a secure, centrally located facility for records.

(9) Consolidating Student Services. This division is currently located in four areas of two buildings. The relocation of most of these to the fourth floor of Cullimore Hall contributes to operational efficiency and overcomes the problems of space inadequacy.

(10) Consolidation of administrative offices. Offices are presently located on five floors in two buildings. Relocation of Purchasing, Employee Relations, Continuing Education and Academic Affairs would improve and upgrade communication as well as efficiency.

(11) Enlarge and reallocate physical education building. The existing women's locker room is extremely undersized for the increasing enrollment of women students. Also, the men's locker room is undersized and additional athletic facilities are needed. An additiion to the building, together with modifications to enlarge locker rooms, will upgrade most existing athletic programs and provide a more balanced co-educational facility.

## 9.3 CAMPUS PLAN CONCEPT

As documented earlier, the largest spatial needs are in the areas of research and housing. Fortunately, these needs offer the Institute an opportunity to give its campus form and identity while making a possible statement to the Newark community as well. A Concept Plan illustrating the development of resources to satisfy these needs is shown on page 9-5.

### 1. Housing

It is clear that student housing can positively influence the character of the campus. Extensive student residence development provides what may be the single most powerful urban design tool available. The scale, building type, and location of these housing units must be most carefully considered in concert with programs at Rutgers University.

Resident students generate the need for support services and these in turn attract more people. The construction of low density housing units of many types (efficiency, one-bedroom, multi-student suites, 2-3 bedroom, etc.) would permit faculty and staff to begin to live on or near the campus, and a college neighborhood character could develop.

A study by the Student Services Housing Committee with professional assistance has considered housing type, density and funding for phase II of the present housing project in order to program a 360-bed unit so that concept documents could be prepared to meet existing deadlines.

## 2. Research Park

As previously discussed, internal studies have indicated a need for additional research space on campus. A new concept of an urban research park may reshape the role of research and revise upwardly the estimates of space needed. With North Carolina's Research Triangle, the MIT-developed Cambridge Research Park, and Princeton's Forrestal Center as partial models, it is proposed that consideration be given to a joint Institute-private corporation center for state of the art research and development, possibly including light manufacturing. Such a research park could cement already favorable relationships between the Institute and industry, attract additional research-oriented faculty, create career opportunities for students, enhance opportunities for contract research, and foster economic growth -- Newark's most pressing problem.

The first phase is currently projected to be a new NJIT Research Center, a structure on the south side of Central Avenue adjacent to the Mechanical Engineering Building.

In addition to providing office and laboratory space, and a staging area, a contingency area would be provided. If the research growth of the last several years is any indicator , continued research expansion is a strong liklihood. Additionally, the contingency space could be used to test-market commercial and corporate uses on a small scale.

## 3. Academic Space Needs

With additional space provided in a new Research Center, present research space would be freed for academic needs. The staging area of the new Research Center could also house academic departments on a temporary basis, affording considerable flexibility in future space planning.

## 4. Athletic Fields

The need for additional athletic fields requires further consideration. Both Essex County College and Rutgers University contemplate expansion of such facilities, and needless duplication should be avoided if possible. The area to the south is ideal for a shared athletic facility, as good access is given to all three institutions as well as to NJIT's existing field.

Further studies by a joint committee will be made to explore in detail the feasiblity of joint development which would create the possibility of high quality, specialized athletic facilities.

## 5. Parking

NJIT currently has available 169 parking spaces in reserved lots, 16 spaces set aside for guest parking, and 523 unreserved spaces. However, siting the second phase of the dormitory near the existing dormitory will remove at least 40 of the adjacent parking spaces. On-street parking in the immediate area of the NJIT campus provides space for approximately 270 automobiles. Development of the proposed Research Center along Central Avenue will remove additional NJIT-owned parking spaces from the total available, while increasing demand.

Privately-owned parking lots in the area south of Warren Street offer approximately 400 parking spaces. This total may be reduced in the near future by some combination of the following activities:

1. Rutgers University or Essex County College purchase of the large lot between High and Summit Streets bordering Raymond Blvd. and Warren St.,
2. NJIT student housing construction,
3. Acquisition of land by NJIT and/or Essex County College for athletic facilities.

Therefore, a program of phased land acquisition to provide on-grade parking in small to medium size lots will continue.

Clearly, the most pressing needs are presented by several expanding research and housing programs. The buildings which house these programs should express to the community and to the State, the Institute's commitment to the state of the art in research and public service.

# CHAPTER X. THE PLANNING PROCESS

## 10.1 RESOURCES AND RESOURCE ALLOCATION

### Funding

New Jersey Institute of Technology operates under an annual contract with the New Jersey State Board of Higher Education to provide educational services. Approximately two-thirds of its operating expenses are met through State appropriation, the balance derived from tuition, fees, income from auxiliaries, and private giving. The Alumni Association of NJIT and the Foundation at NJIT are Institute-related organizations through which private giving is solicited.

### Fund-Raising by the Alumni Association of NJIT

An Alumni Association drive to finance construction of an Alumni Center for Continuing Education in the early 1960's was the first, capital campaign conducted by this organization. The drive was successful and the building is among the most extensively utilized on campus.

In 1975, the NJIT Alumni Association began its second capital fund-raising campaign with the objective of raising $1 million for the purchase of properties contiguous to the campus and for the purchase of the 200 Central Avenue building, now being rehabilitated to house the Mechanical Engineering Department facilities. The campaign has to date raised approximately $700,000 and is continuing to completion.

In addition to the capital campaign, the Alumni Association assists the Institute through scholarships, and support of athletics and Social Competence programs at NJIT, to cite several examples.

### Fund-Raising Through the Foundation at NJIT

The Foundation at NJIT was organized in 1959 to encourage graduate study and research and provides funding of approximately $180,000 each year toward programs of research. These funds, since the beginning, have been used to provide seed money for the development of research programs at the Institute. Out of these efforts have grown federal research grants and recognition of research accomplishments by the State, which has resulted in the Separately Budgeted Research program discussed in the opening section of Chapter VI.

Because of the growing needs of the Institute in the area of capital construction, the Foundation has within the past years broadened its objectives to include a major fund raising program. This effort is being conducted with the assistance of the prestigious Board of Overseers of the Foundation, whose members represent major national and New Jersey corporations at the uppermost management levels.

In 1979 a feasibility study of the Institute's capacity to generate private funding was completed. The study, conducted by a consulting firm, indicated potential for the Institute to raise on the order of ten million dollars for capital projects. As noted earlier, a twelve million dollar campaign was initiated in 1980.

## Student Financial Aid

The primary goal of student financial aid at the Institute is to overcome the economic barrier for students who seek admission and who could not otherwise attend and benefit from the educational experience. To this end the Institute participates in all major funding programs based upon student need and utilizes nationally accepted methodologies for assessing need. The Office of Financial Aid serves as the local agent for these programs and functions as a broker between existing resources and families seeking assistance. A key objective in this regard is to forecast future needs accurately and to obtain the maximum funding for which the institution's future population will be eligible.

A secondary goal is to provide the means to meet additional social objectives through incentive programs of non-need based aid funded through other sources. These objectives may include the recognition and hence the encouragement of exceptional scholarship, increasing the academic quality of the student population, attracting to the professions a great number of minorities, and encouraging gifted students to pursue careers in areas of greatest social need such as environmental protection and energy conservation. These goals are not sought at the expense of the primary mission concerning need-based assistance, but should augment those efforts.

To carry out those secondary goals, the Institute will continue to actively seek funding of private and special interest scholarships and will utilize the utmost creativity to develop new sources and methods for aiding students. The Office of Financial Aid will cooperate with and assist the Development Office and individual academic departments in this effort.

Both the primary and secondary goals depend importantly upon rapid and effective information processing and communication systems, specifically:

- In order to evaluate admissions opportunities, families must learn about available financial assistance in a timely manner.
- Forecasting the total needs of the population requires accurate analysis of large quantities of information.
- Continued eligibility for programs often depends upon prompt reporting of current utilization.
- Finally, efficient utilization of available resources requires continued monitoring of funds in use. The Institute must do all that it can with the resources at its disposal.

As the focal point of a large volume of data from the College Scholarship Service, Basic Grant Program, State programs, etc., the Office of Financial Aid must display and analyze this information in order to render appropriate judgments required to achieve institutional goals and objectives. Certain sub-elements of the total system are totally automated. As the coordinating organization which interacts with students, and in view of certain unquantifiable differences which characterize each family, the Office must rely upon professional judgments supported by and based upon timely information. The critical role of this office resulted in the decision in 1979 to add two professional staff members. The office model which evolved from this plan called for adequate professional staffing in addition to terminal links with visual display of a student data base with direct input capability. In addition to using this data for decision making, such a system with storage capabilities would facilitate necessary record keeping and reporting activities. Implementation of such a system will be a component of the Student Information System planned for implementation in 1982.

It should be noted that the complexities of the financial aid operation have been compounded in recent years by enormous increases in volume. In

1978-79, the office provided assistance to 2,811 students from 18 different source programs, totaling roughly two and one half million dollars. The rate of growth in recent years has been on the order of 20 to 24 per cent annually and now impacts on well over half of the students attending the Institute. Sheer volume means that aid objectives can only be approached realistically through automation of data handling. Communication of decisions to students can also be enhanced through associated word processing equipment. This would impact directly and positively on the goals of the aid operation.

## Continuing Education

In keeping with the projected expansion of programs and enrollments as discussed in Section 7.3, the gross revenues of the Division of Continuing Education are expected to grow proportionally, as displayed in the graph of Appendix H, page H-12.

It is to be hoped that, in addition to the income from self-supporting programs, the State will aid in supporting programs and courses developed for the benefit of smaller groups of individuals, whose numbers do not permit of full cost recovery, as, for example professional re-training and advancement.

## The Budget Process

The NJIT Master Plan, Phase I' June 1978 states: "The Institute will continue its development of a comprehensive, coordinated budget process which will include revenue and expense projections, contingency plans, and a control data base as integral parts. The budget process will be coordinated with both long-range and short-range planning activities of the Institute". Also desired is a process involving wider participation of Institute faculty and administrators.

Time constraints are such that the Institute must be working on three annual budgets simultaneously (current working budget, developing budget request, and future asking budget). The budget cycle is therefore a complex process which must:

1. Utilize data from quarterly reviews of the working budget to aid in the formulation of decisions regarding the developing and asking budgets.

2. Develop a draft asking budget with sufficient lead time for modifications to be made before the due date for submission to the State.

3. Clearly outline Institute personnel responsibilities for budgetary decisions as the cycle progresses, permiting academic department chairmen and administrative heads appropriate input in the process.

## Budget Projections

Projections of budgets based on current formula parameters are shown in the table of Appendix H, pages H-10 and H-11. A five-year trend reflects the projected changes in enrollment and a seven per cent inflation rate*. The sum of the three formula components, Instruction, General Support, and Physical Plant, provides a base of resources for the purpose of planning. The specific allocations and reallocations within that base will reflect Institute and departmental master planning efforts.

The Institute is presently engaged in discussion with the Department of Higher Education regarding specific parameters of the formulas. It is not known what the outcomes of these discussions will be. It is for this reason that the current formula parameters are used in the calculations.

It is anticipated that a more fully developed budget and planning policy will be put into operation during fiscal year 1980-1981.

## Allocation and Reallocation of Physical Facilities

The planning for allocating space and equipment, like the budget process, must engage as wide a representation of Institute interests as possible. The planning process illustrated in the charts of Chapter IV, pages 9-2 and 9-3 is schematically the idea followed in the preparation of a revised space allocation and reallocation procedure to be initiated in the 1980-81 fiscal year. A Phase II Facilities Master Plan is planned for completion in 1981.

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*Experience has proved this seven percent figure to be an unforunately low projection. Future updates will reflect a figure of at least ten percent for the years in question.

## 10.2 PLANNING AND EVALUATION

Planning and its complement, evaluation, are necessary but costly exercises. To be effective they must involve the people who implement the plans, and this involvement requires a great deal of time -- time taken from the day-to-day academic and administrative duties which are a first priority. Preparation of academic program proposals, the NJIT Master Plan, Phase I, the Programmatic Overview, the Institutional Summary Planning Statement, The Facilities Master Plan, Phases I and II, the various accreditation reports, and this Phase II Master Plan, all demanded much expenditure of time on the part of administrators and faculty. On-going are the preparation of individual departmental master plans, departmental and program evaluations, as well as documentss for the forthcoming accreditation visits. These are all in addition to the annual planning that goes into budget preparation and funding proposals for research, special programs, etc.

It is therefore useful to "plan for planning" -- to schedule major planning efforts so they are not overlapping but, to the extent possible, complement each other in such a way as to provide an on-going planning process which can focus on one project at a time.

In addition to the budget planning cycle, discussed earlier, there are three planning calendars which, while relatively independent of each other, can be arranged with some degree of coordination.

### 1. Accreditation Calendar

The three accrediting agencies, the Commission on Higher Education of the Middle States Association (MSA), the Accreditation Board of Engineering and Technology (ABET; formerly ECPD), and the National Architectural Accrediting Board (NAAB) have their independent cycles for accreditation of NJIT's programs. The calendar for reports and visitations involving these agencies is shown on the following page. It will be noted that 1981-1982 will be an especially busy year, with three of the four visitations scheduled.

### 2. Self-Assessment

The program of periodic self-evaluation with external review of the Institute's academic departments and programs was successfully initiated

## ACCREDITATION CALENDAR

| Nominal Cycle | AGENCY PROGRAMS | 1979-1980 | | 1980-1981 | | 1981-1982 | | 1982-1983 | | 1983-1984 | | 1984-1985 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| 10 Yr* | Middle States Assoc.<br>All programs | | I | | | | E,V* | | | | | | |
| | A.B.E.T. | | | | | | | | | | | | |
| 6 Yr | Engineering (All) | | R | | E | | | I | | | V | | |
| 6 Yr** | Technology (All) | | | | I | | E,V | | | | | | |
| 5 Yr** | N.A.A.B.<br>Architecture | | | | $I_1$ | | E,V | | | | | | |

E = Expiration of current accreditation

I = Initiation or request due to next visitation. Begin preparation.

R = Report due, to extend accreditation to next visitation date.

* "Self-Study" and "Case Study" alternate each 10-year period. "Self Study" in 1982.

** After "start-up" phases not yet completed.

$I_1$ = Educational Development Plan (EDP) to be completed and sent to N.A.A.B.

V = Visititation.

this year. It is planned to continue in both modes -- review by program and review by academic department -- and the Committee on Self-Assessment has planned the review cycle shown on the page 10-9. This schedule is designed to be complementary to the accreditation cycles discussed in the preceding paragraph.

## 3. Institute and Departmental Master Plans

The State Department of Higher Education in its "Call for the Preparation of the 1980 New Jersey Higher Education Statewide Plan" (June 16, 1978) set forth a calendar for individual institutional master plans meshing with the timetable for the Statewide Plan. Slippage in the deadlines chosen for the Statewide Plan have been reflected in changes in the schedule for the individual institutional master plans. The latest target dates, set forth in a memorandum from Department of Higher Education Chancellor Hollander, dated September 25, 1980, are included in the table of NJIT's master planning schedule on page 10-10. The DHE evolved a progression of four stages in the institutional planning process:

1. Sector planning formats
2. Summary mission statements
3. Summary institutional planning statements
4. Institute master plans

The last three items have also been referred to by DHE as institutional master plan phases I, II, and III.

NJIT had previously included most of the material required in the Summary Planning Statement in its Master Plan, Phase I, and had outlined its mission* as requested for the Summary Mission Statement in March 1980. A Summary Institutional Planning Statement was issued in March 1980, and this Master Plan, Phase II, will be issued in draft form at the end of June 1980, six months ahead of the schedule established by the DHE.

Faculty hearings will be held after classes resume in the Spring, after which the Plan will be submitted to the Board of Trustees. Changes resulting from the hearings, Board comments, or the final draft of the Statewide Master Plan, will be included at that time.

## ACCREDITATION SCHEDULE

1. Institute

The Commission on Higher Education of Middle States Association of Colleges and Schools (MSA) hs scheduled an accreditation visit for March 15-17, 1982. In preparation for this team visit, the Long Range Planning Committee was designated the Self-Study Steering Committee in the fall of 1981 and began to plan the assessment. A selected topics approach will be utilized. Task Forces were formed in January, 1981 to report by the end of the calendar year.

2. Newark College of Engineering

Engineering Technology programs will be reviewed during the fall of 1981 by the Technology Accreditation Commision (TAC) of the Accrediting Board for Engineering and Technology (ABET). A self analysis will be prepared during the spring of 1981 for the following programs: Construction/Contracting Engineering Technology, Electrical Systems Engineering Technology, Environmental Engineering Technology, Manufacturing Engineering Technology and Mechanical Systems Engineering Technology.

The Accreditation Board of Engineering and Technology will not be reviewing engineering programs until 1983-84. On the basis of an interim report in the spring of 1980, the Engineering Accreditation Commission (EAC) of ABET extended accreditation of the following programs until September, 1984: Chemical, Civil and Environmental, Electrical, Industrial and Mechanical Engineering.

3. New Jersey School of Architecture

The New Jersey School of Architecture is required to submit an Educational Development Plan to the National Architecture Accrediting Board (NAAB) in April, 1981. The Board will arrange a team visit for the spring of 1982.

## DEPARTMENTAL AND PROGRAMATIC SELF-ASSESSMENT SCHEDULE

### 1979 - 1984

**1979 - 80**

Computer and information science
Organizational and Social Science
B.S. in Industrial Administration
Civil Engineering

**1980 - 81**

Chemistry
Chemical Engineering
Mathematics
EnvironmeNtal Engineering (graduates)

**1981 - 82**

Graduate programs and research
Electrical Engineering
Humanities and Man and Technology
Continuing Education

**1983 - 84**

Mechanical Engineering
Architecture
DOT - Certificate Program

**1984 - 85**

Industrial Engineering
Physics
Engineering Science

## MASTER PLAN SCHEDULES*

| Date Due | NJIT Document | DHE Document |
|---|---|---|
| June 1978 | Master Plan, Phase I | |
| Dec 1978 | | Sector Planning Format |
| Mar 1979 | Programmatic Overview | |
| Mar 1980 | Summary Planning Statement | |
| May 1980 | | Summary Mission Statement |
| June 1980 | Master Plan II, Draft | Draft Statewide Plan Concluded |
| Oct 1980 | Comments Requested | |
| Feb 1981 | Campus Hearings | Public Hearings |
| **Apr 1981 | Revised Master Plan II | Statewide Plan to Board of Higher Education |
| **June 1981 | Institutional Plan Phase II | |
| ......... | | |
| Sept 1984 | Begin update | |
| June 1985 | 1985-86 Update, Draft | |
| Dec 1985 | Complete 1985-86 Update | |

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* Schedule for statewide institutional master plans, as amended in Memorandum of January 7, 1980.

**These revised dates were amended again in a letter from Chancellor Hollander dated September 25, 1980.

The NJIT Master planning cycle shown in the figure envisions a five-year update of the 1980-1981 Plan in 1985-1986 (ahead of the next accreditation cycle sstarting in the Spring of 1987). If the five-year interval proves viable, a new master plan should be undertaken in 1990-1991.

More immediately, it will be the responsibility of the Office of Planning and Institutional Research to accomplish annual review and update of this plan. The achievement of goals and objectives will be monitored closely.

# APPENDICES

# Appendix A

## LONG RANGE PLANNING COMMITTEE

## 1979-1980

## LONG-RANGE PLANNING COMMITTEE

### 1979 - 1980

Dr. Saul K. Fenster, Chairman

Dr. A. Allentuch
Dr. L. B. Anderson
Dr. W. B. Becher
Dr. L. Buteau
Mr. J. Campbell
Professor W. Clements
Dr. J. Droughton
Professor J. Maddocks
Dr. E. Golub
Dr. R. Helfgott
Dean Barry Jackson
Mr. J. A. Lacy

Dr. A. LaSalle
Mr. H. A. Mauermeyer
Dr. E. Morante
Dr. C. Murray
Dr. J. O'Connor
Dr. M. Perez
Mr. A. R. Pulhamus
Dr. F. A. Russell
Dr. F. Salek
Dr. E. Smithberg
Dr. T. Zaner
Mr. E. Keane, Student Senate President

### Additional Members in 1980 - 1981

Mr. A. Bedrosian
Dr. R. W. Cost
Professor H. Kimmel
Mr. V. Nelson

Professor J. Rigassio
Professor L. Schmerzler, Chairman, Faculty Council (1980-1981)
Mr. P. Sklannik, Student Senate President (1980-1981)
Dr. G. Thomas

## LONG-RANGE PLANNING COMMITTEE - SUBCOMMITTEES

1. DEPARTMENTAL MASTER PLANS - E. Golub, Chairperson

J. Campbell
H. Ellermets
D. Hanesian
R. Helfgott
B. Jackson
H. Kimmel
J. Kopf
L. Landsman
E. Miller
G. Moshos
J. Pattinson
J. Rigassio
J. Strano
H. Zatzkis

2. ADMISSIONS POLICY AND PLANNING SUBCOMMITTEES

A. Graduate Development - J. Droughton, Chairperson

L. B. Andersen
W. Ball
H. Powell
J. Scher
C. Sen

B. Undergraduate Retention - L. B. Andersen, Chairperson

J. Campbell
J. Craig
R. Gautreau
D. Getzin
N. Holtzman
R. Lynch
E. Morante
C. Murray
V. Nelson
R. Voronka
A. Wexler

3. PUBLIC SERVICE SUBCOMMITTEE - J. O'Connor, Chairperson

A. Allentuch
J. Campbell
J. Eignor
R. Hatch
J. Kopf
W. Savin

4. RESEARCH SUBCOMMITTEE - A. Allentuch, Chairperson

L. Dauerman
J. Liskowitz
H. Perlis
A. Perna
M. Turoff

CONTINUING EDUCATION SUB-SUBCOMMITTEE - A. Bedrosian, Chairperson

A. Allentuch
J. Eignor
R. Progelhof
W. Reynolds

5. FINANCIAL PROCESS & RESOURCES SUBCOMMITTEE - A. Pulhamus, Chairperson

A. Allentuch
D. Gibson
A. Lacy
H. Mauermeyer
M. Perez
J. Rigassio
E. Stamper
N. Tworischuk

## Appendix B

# HISTORICAL FRESHMAN PROFILE DATA
## 1974-1979

Source of Data:
Admissions Office

# HIGH-SCHOOL REQUIREMENTS FOR FRESHMAN ADMISSIONS

## All Programs

16 Units in college preparatory program, including:

- 4 Units of English
- 2 Units of laboratory science

## Engineering, Engineering Science and Computer Science

Encouraged to take physics and chemistry as "laboratory science" above

3-1/2 Units of mathematics, including trigonometry

## Pre-Architecture

Encouraged to take physics and biology as "laboratory science" above

3-1/2 Units of mathematics, including trigonometry

## Industrial Administration and "Man and Technology"

Encouraged to take 3 units of mathematics

# PERCENTAGE DISTRIBUTION OF FRESHMEN CLASSES
## BY PLACE OF RESIDENCE AND BY SCHOOL BACKGROUND

| COUNTY | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| Essex | 19.1 | 19.2 | 20.7 | 20.0 | 20.6 | 18.4 |
| Bergen | 17.0 | 19.6 | 21.0 | 18.0 | 16.9 | 22.3 |
| Union | 12.1 | 11.8 | 13.6 | 12.5 | 12.3 | 11.1 |
| Passaic | 13.1 | 10.5 | 11.4 | 11.1 | 12.3 | 10.1 |
| Hudson | 10.3 | 8.2 | 10.6 | 10.5 | 10.2 | 10.6 |
| Morris | 8.1 | 10.2 | 6.5 | 9.3 | 8.1 | 8.6 |
| Subtotal | 80.6 | 79.5 | 83.8 | 81.4 | 80.4 | 81.1 |
| Middlesex | 8.1 | 8.8 | 7.5 | 7.7 | 7.8 | 6.7 |
| Monmouth | 3.5 | 3.0 | 3.9 | 3.8 | 3.5 | 2.9 |
| Somerset | 2.9 | 3.3 | 2.2 | 2.2 | 2.9 | 2.9 |
| Subtotal | 14.5 | 15.1 | 13.6 | 13.7 | 14.2 | 12.5 |
| Other N.J. | 2.9 | 3.7 | 2.2 | 2.9 | 2.0 | 3.4 |
| Other U.S. | 1.1 | 1.7 | --- | 1.2 | 2.1 | 1.5 |
| Foreign | 1.8 |  | 0.4 | 0.7 | 1.3 | 1.5 |
| Subtotal | 5.8 | 5.4 | 2.6 | 4.8 | 5.4 | 6.4 |
| **SCHOOL BACKGROUND** |  |  |  |  |  |  |
| Public H. S. | 75.9 | 77.2 | 80.2 | 75.6 | 80.3 | 80.9 |
| Independent H. S. | 24.1 | 22.6 | 19.7 | 22.1 | 19.6 | 18.9 |
| G. E. D. | --- | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| Current H. S. Diploma | 96.9 | 95.3 | 97.1 | 92.8 | 95.4 | 93.1 |
| Prior H. S. Graduation | 3.1 | 4.7 | 2.9 | 7.2 | 4.6 | 6.9 |

## SUMMARY OF MEAN SAT SCORES AND HIGH-SCHOOL DECILE RANKS
### DISTRIBUTION OF FRESHMEN BY PROGRAM

| PROGRAM | 1975 FRESHMEN | | | | 1976 FRESHMEN | | | |
|---|---|---|---|---|---|---|---|---|
| | Verbal SAT | Math SAT | Combined SAT | H. S. Decile | Verbal SAT | Math SAT | Combined SAT | H. S. Decile |
| Engineering<br>Engineering Science<br>Computer Science | 457 | 565 | 1035 | 3.7 | 452 | 565 | 1020 | 3.4 |
| Pre-Architecture | 464 | 565 | 1030 | 3.6 | 492 | 590 | 1076 | 2.5 |
| "Man and Technology" | 480 | 578 | 1006 | 4.3 | 463 | 522 | 985 | 3.4 |
| Bachelor of Industrial Administration | 491 | 521 | 1013 | 4.6 | 458 | 579 | 1037 | 3.3 |

| PROGRAM | 1977 FRESHMEN | | | | 1978 FRESHMEN | | | | 1979 FRESHMEN | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Verbal SAT | Math SAT | Combined SAT | H. S. Decile | Verbal SAT | Math SAT | Combined SAT | H. S. Decile | Verbal SAT | Math SAT | Combined SAT | H. S. Decile |
| Engineering<br>Engineering Science<br>Computer Science | 448 | 568 | 1020 | 3.1 | 443 | 560 | 1003 | 3.0 | 459 | 571 | 1030 | 2.6 |
| Pre-Architecture | 491 | 598 | 1091 | 2.2 | 476 | 574 | 1050 | 2.3 | 479 | 584 | 1062 | 2.3 |
| "Man and Technology" | 425 | 478 | 896 | 4.7 | 390 | 470 | 859 | 4.4 | 437 | 513 | 950 | 4.7 |
| Bachelor of Industrial Administration | 420 | 513 | 933 | 4.3 | 462 | 497 | 959 | 4.1 | 462 | 572 | 1034 | 2.6 |

Note: Data by program unavailable for 1974 Freshmen

## DISTRIBUTION BY MATH (LEVEL 1) ACHIEVEMENT SCORES
## Engineering/Engineering Science/Computer Science

| Math Achievement Range | 1974 Freshmen |  |  | 1975 Freshmen |  |  | 1976 Freshmen |  |  |
|---|---|---|---|---|---|---|---|---|---|
|  | No. | Percentage | Percentage Scoring At or Above | No. | Percentage | % Scoring At or Above | No. | Percentage | % Scoring At or Above |
| 750-800 | 3 | 0.7 | 0.7 | 14 | 2.8 | 2.8 | 4 | 1.0 | 1.0 |
| 700-749 | 17 | 4.0 | 4.7 | 25 | 4.9 | 7.7 | 18 | 4.4 | 5.4 |
| 650-699 | 27 | 6.4 | 11.1 | 52 | 10.2 | 17.9 | 42 | 10.2 | 15.6 |
| 600-649 | 63 | 14.9 | 26.0 | 77 | 15.1 | 33.0 | 60 | 14.6 | 30.2 |
| 550-599 | 98 | 23.1 | 49.1 | 105 | 20.6 | 53.6 | 106 | 25.8 | 56.0 |
| 500-549 | 124 | 29.2 | 78.3 | 136 | 26.8 | 80.4 | 111 | 27.0 | 83.0 |
| 450-499<br>Below 450 | 92* | 21.7 | 100.0 | 82 | 16.1 | 96.5 | 59 | 14.4 | 97.3 |
| Below 450 |  |  |  | 18 | 3.5 | 100.0 | 11 | 2.7 | 100.0 |
|  | 424 |  |  | 509 |  |  | 411 |  |  |

*Below 500

| Math Achievement Range | 1977 Freshmen |  |  | 1978 Freshmen |  |  | 1979 Freshmen |  |  |
|---|---|---|---|---|---|---|---|---|---|
|  | No. | Percentage | % Scoring At or Above | No. | Percentage | % Scoring At or Above | No. | Percentage | % Scoring At or Above |
| 750-800 | 6 | 1.3 | 1.3 | 6 | 1.3 | 1.3 | 1 | .2 | .2 |
| 700-749 | 18 | 3.8 | 5.1 | 14 | 3.0 | 4.3 | 5 | 1.1 | 1.3 |
| 650-699 | 35 | 7.8 | 12.9 | 37 | 7.9 | 12.1 | 42 | 9.6 | 10.9 |
| 600-649 | 70 | 15.6 | 28.5 | 55 | 11.7 | 23.8 | 57 | 13.0 | 23.9 |
| 550-599 | 115 | 25.5 | 54.0 | 124 | 26.4 | 50.2 | 118 | 26.9 | 50.8 |
| 500-549 | 112 | 24.9 | 78.9 | 112 | 23.8 | 74.0 | 128 | 29.2 | 80.0 |
| 450-499 | 71 | 15.8 | 94.7 | 91 | 19.4 | 93.4 | 67 | 15.2 | 95.2 |
| Below 450 | 24 | 5.3 | 100.0 | 31 | 6.5 | 100.0 | 21 | 4.8 | 100 |
|  | 451 |  |  | 470 |  |  | 439 |  |  |

## ENGINEERING / ENGINEERING SCIENCE / COMPUTER SCIENCE

### DISTRIBUTION BY SAT MATH SCORES AND CLASS RANK IN SECONDARY SCHOOLS

1974 Freshman Class

| S.A.T. MATH RANGE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7- 10 | | | | |
| 750–800 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.9 | 0.9 |
| 700–749 | 8 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 13 | 3.0 | 3.9 |
| 650–699 | 9 | 13 | 9 | 6 | 3 | 6 | 2 | 1 | 49 | 11.6 | 15.5 |
| 600–649 | 11 | 18 | 12 | 9 | 8 | 7 | 5 | 3 | 73 | 17.2 | 32.7 |
| 550–599 | 10 | 13 | 15 | 12 | 6 | 14 | 9 | 2 | 81 | 19.1 | 51.8 |
| 500–549 | 17 | 16 | 17 | 16 | 16 | 19 | 20 | 4 | 125 | 29.5 | 81.3 |
| Below 500 | 12 | 13 | 8 | 9 | 10 | 18 | 10 | 9 | 79 | 18.7 | 100.0 |
| TOTALS | 70 | 77 | 61 | 52 | 44 | 55 | 46 | 19 | 424 | | |
| Percentage | 16.5 | 18.1 | 14.4 | 12.3 | 10.4 | 13.0 | 10.8 | 4.5 | | | |
| % RANKING AT OR ABOVE | 16.5 | 34.6 | 49.0 | 61.3 | 71.7 | 84.7 | 95.5 | 100 | | | |

1975 Freshman Class

| S.A.T. MATH RANGE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 750-800 | 1 | | | | | | | | 1 | .2 | .2 |
| 700-749 | 4 | 12 | 1 | 2 | | | 1 | | 20 | 4.0 | 4.2 |
| 650-699 | 14 | 12 | 11 | 3 | 1 | 4 | 1 | 1 | 47 | 9.0 | 13.2 |
| 600-649 | 12 | 14 | 21 | 15 | 17 | 13 | 6 | | 98 | 19.3 | 32.5 |
| 550-599 | 20 | 18 | 13 | 24 | 13 | 15 | 16 | 6 | 125 | 24.6 | 57.1 |
| 500-549 | 14 | 25 | 20 | 26 | 15 | 5 | 16 | 3 | 124 | 24.4 | 81.5 |
| Below 500 | 8 | 16 | 8 | 19 | 21 | 8 | 10 | 4 | 94 | 18.5 | 100.0 |
| TOTALS | 73 | 97 | 74 | 89 | 67 | 45 | 50 | 14 | 509 | | |
| Percentage | 14.3 | 19.0 | 14.5 | 17.4 | 13.1 | 8.8 | 9.9 | 3.0 | | | |
| % RANKING AT OR ABOVE | 14.3 | 33.3 | 47.8 | 65.2 | 78.3 | 87.1 | 97.0 | 100 | | | |

1976 Freshman Class

| S.A.T. MATH RANGE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 - 10 | | | | |
| 750–800 | 2 | 2 | | 1 | 1 | | | 1 | 7 | 1.6 | 1.6 |
| 700–749 | 4 | 5 | 2 | | 1 | | | 1 | 13 | 3.0 | 4.6 |
| 650–699 | 13 | 7 | 5 | 6 | 4 | 2 | 3 | | 40 | 9.1 | 13.7 |
| 600–649 | 15 | 17 | 17 | 15 | 2 | 5 | 7 | 1 | 79 | 18.0 | 31.7 |
| 550–599 | 16 | 20 | 21 | 12 | 12 | 15 | 5 | 4 | 105 | 23.9 | 55.6 |
| 500–549 | 18 | 15 | 27 | 19 | 13 | 11 | 6 | 6 | 115 | 26.2 | 81.8 |
| Below 500 | 9 | 21 | 10 | 14 | 16 | 6 | 3 | 1 | 80 | 18.1 | 100.0 |
| TOTALS | 77 | 87 | 82 | 67 | 49 | 39 | 24 | 14 | 439 | | |
| Percentage | 17.5 | 19.8 | 18.7 | 15.3 | 11.2 | 8.9 | 5.5 | 3.2 | | | |
| % RANKING AT OR ABOVE | 17.5 | 37.4 | 56.0 | 71.3 | 82.5 | 91.3 | 96.8 | 100 | | | |

*Rank not available includes students with decile ranks that would tend to be misleading: (e.g.: ex-servicemen, prep school graduates and other students whose atypical credentials might present a distorted impression.)

## ENGINEERING / ENGINEERING SCIENCE / COMPUTER SCIENCE

### DISTRIBUTION BY SAT MATH SCORES AND CLASS RANK IN SECONDARY SCHOOLS

1977 Freshmen Class

| S.A.T. MATH RANGE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 750-800 | 3 | 1 | 2 | | | | | | 6 | 1.3 | 1.4 |
| 700-749 | 8 | 4 | 4 | | 5 | 2 | 2 | 3 | 28 | 5.9 | 7.1 |
| 650-699 | 15 | 11 | 9 | 3 | 2 | 4 | 1 | 2 | 47 | 9.9 | 17 |
| 600-649 | 12 | 20 | 19 | 3 | 7 | 6 | 3 | 2 | 72 | 15.1 | 32.1 |
| 550-599 | 18 | 23 | 23 | 20 | 19 | 14 | 14 | 3 | 134 | 28 | 60.1 |
| 500-549 | 14 | 16 | 21 | 19 | 23 | 13 | 10 | 4 | 120 | 25.1 | 85.1 |
| Below 500 | 4 | 11 | 13 | 13 | 11 | 7 | 4 | 7 | 70 | 14.7 | 100 |
| TOTALS | 74 | 86 | 91 | 58 | 67 | 46 | 34 | 21 | 477 | | |
| Percentage | 15.5 | 18.1 | 19.1 | 12.2 | 14 | 9.6 | 7.1 | 4.4 | | | |
| % RANKING AT OR ABOVE | 15.9 | 33.8 | 52.8 | 64.8 | 78.6 | 88.1 | 95.3 | 100 | | | |

1978 Freshman Class

| S.A.T. MATH RANGE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 750-800 | 4 | 1 | | | | | | 1 | 6 | 1.2 | 1.2 |
| 700-749 | 7 | 5 | 4 | | 1 | | 1 | 2 | 20 | 3.9 | 5.1 |
| 650-699 | 10 | 7 | 7 | 9 | 3 | 3 | 2 | 3 | 44 | 8.6 | 13.7 |
| 600-649 | 16 | 15 | 7 | 15 | 11 | 3 | 8 | 4 | 79 | 15.5 | 29.2 |
| 550-599 | 15 | 22 | 20 | 29 | 16 | 8 | 6 | 4 | 120 | 23.5 | 52.6 |
| 500-549 | 15 | 27 | 21 | 29 | 26 | 16 | 12 | 5 | 151 | 29.5 | 82.2 |
| Below 500 | 13 | 18 | 16 | 21 | 9 | 9 | 4 | 1 | 91 | 17.8 | 100 |
| TOTALS | 80 | 95 | 75 | 103 | 66 | 39 | 33 | 20 | 511 | | |
| Percentage | 15.6 | 18.6 | 14.6 | 20.2 | 12.9 | 7.6 | 6.5 | 4 | | | |
| % RANKING AT OR ABOVE | 15.6 | 34.2 | 48.9 | 69.1 | 82 | 89.6 | 96 | 100 | | | |

1979 Freshmen Class

| S.A.T. MATH RANGE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 750-800 | 2 | | | | | | | | 2 | .4 | .4 |
| 700-749 | 8 | 2 | 2 | 1 | 1 | | 1 | | 15 | 3.1 | 3.5 |
| 650-699 | 9 | 8 | 8 | 8 | 3 | | 1 | 2 | 39 | 8.1 | 11.7 |
| 600-649 | 25 | 16 | 15 | 8 | 7 | 8 | 8 | 2 | 89 | 18.5 | 30.2 |
| 550-599 | 25 | 25 | 32 | 17 | 20 | 6 | 7 | 9 | 141 | 29.4 | 59.6 |
| 500-549 | 23 | 25 | 23 | 29 | 16 | 10 | 7 | 8 | 141 | 29.4 | 89 |
| Below 500 | 12 | 17 | 10 | 9 | 3 | | | 2 | 53 | 11.1 | 100 |
| TOTALS | 104 | 93 | 90 | 72 | 50 | 24 | 24 | 23 | | | |
| Percentage | 21.7 | 19.4 | 18.8 | 15 | 10.4 | 5 | 5 | 4.8 | 480 | | |
| % RANKING AT OR ABOVE | 21.7 | 41 | 59.8 | 74.8 | 85.2 | 90.2 | 95.2 | 100 | | | |

*Rank not available includes students with decile ranks that would tend to be misleading: (e.g.: ex-servicemen, prep school graduates and other students whose atypical credentials might present a distorted impression.)

# PRE-PROFESSIONAL ARCHITECTURE

## DISTRIBUTION BY COMBINED SAT MATH & VERBAL SCORES & CLASS RANK IN SECONDARY SCHOOLS

1974 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501–1600 | | | | | | | | | | | |
| 1401–1500 | | | | | | | | | | | |
| 1301–1400 | | | | | | | | | | | |
| 1201–1300 | | 1 | 1 | | | | | | 2 | 4 | 4 |
| 1101–1200 | 2 | 2 | 3 | 2 | | 1 | | | 10 | 20 | 24 |
| 1001–1100 | 1 | 3 | 3 | 2 | | 1 | 3 | | 13 | 26 | 50 |
| 901–1000 | | 2 | 3 | 5 | | 1 | 1 | 1 | 13 | 26 | 76 |
| 801– 900 | | 1 | 1 | 1 | 1 | | | | 4 | 8 | 84 |
| 701– 800 | 1 | | | | | | | | 1 | 2 | 86 |
| Below 700 | | | | | 1 | 1 | | 1 | 3 | 6 | 92 |
| TOTALS | 5 † | 10 † | 11 | 10 | 3 | 3 | 6 | 2 | 50 | | |
| Percentage | 10 | 20 | 22 | 20 | 6 | 6 | 12 | 4 | | | |
| % RANKING AT OR ABOVE | 10 | 30 | 52 | 72 | 78 | 84 | 96 | 100 | | | |

†Includes 1 with decile not available

1975 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501–1600 | | | | | | | | | | | |
| 1401–1500 | 1 | | | | | | | | 1 | .7 | .7 |
| 1301–1400 | | | 1 | | | | | | 1 | .7 | 1.4 |
| 1201–1300 | 1 | 1 | | | 1 | | | | 3 | 2.2 | 3.6 |
| 1101–1200 | 5 | 6 | 5 | 2 | 4 | | | | 23 | 16.7 | 20.3 |
| 1001–1100 | 6 | 6 | 12 | 7 | 3 | 3 | 7 | | 44 | 31.9 | 52.2 |
| 901–1000 | 2 | 10 | 14 | 7 | 9 | 10 | 4 | | 56 | 40.6 | 92.8 |
| 801– 900 | 3 | 2 | 3 | 1 | | | | | 9 | 6.5 | 99.3 |
| 701– 800 | | 1 | | | | | | | 1 | .7 | 100 |
| Below 700 | | | | | | | | | | | |
| TOTALS | 19 | 26 | 35 | 17 | 17 | 13 | 11 | | 138 | | |
| Percentage | 13.7 | 18.8 | 25.4 | 12.3 | 12.3 | 9.4 | 8.1 | | | | |
| % RANKING AT OR ABOVE | 13.7 | 32.5 | 57.9 | 70.2 | 82.5 | 91.9 | 100 | | | | |

*Rank not available includes students with decile ranks that would tend to be misleading:(e.g.:ex-servicemen, prep school graduates and other students whose atypical credentials might present a distorted impression.)

## PRE-PROFESSIONAL ARCHITECTURE

### DISTRIBUTION BY COMBINED SAT MATH & VERBAL SCORES & CLASS RANK IN SECONDARY SCHOOLS

1976 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK * | | | | | | | Rank Not Available | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501-1600 | | | | | | | | | | | |
| 1401-1500 | | | | | | | | | | | |
| 1301-1400 | | | | | | | | | | | |
| 1201-1300 | 2 | 2 | 1 | | | | | | 5 | 6.6 | 6.6 |
| 1101-1200 | 3 | 12 | 2 | 5 | 1 | | 2 | | 25 | 32.9 | 39.5 |
| 1001-1100 | 10 | 12 | 8 | 1 | 1 | | | | 32 | 42.1 | 81.6 |
| 901-1000 | 4 | 3 | 1 | 3 | 2 | | | | 13 | 17.1 | 98.7 |
| 801- 900 | 1 | | | | | | | | 1 | 1.3 | 100.0 |
| 701- 800 | | | | | | | | | | | |
| Below 700 | | | | | | | | | | | |
| TOTALS | 20 | 29 | 12 | 9 | 4 | | 2 | | 76 | | |
| Percentage | 26.3 | 38.2 | 15.8 | 11.8 | 5.3 | | 2.6 | | | | |
| % RANKING AT OR ABOVE | 26.3 | 64.5 | 80.3 | 92.1 | 97.4 | 97.4 | 100 | | | | |

1977 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | Rank Not Available* | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501-1600 | | | | | | | | | | | |
| 1401-1500 | | | | | | | | | | | |
| 1301-1400 | | 1 | | | | | | | 1 | 1.3 | 1.3 |
| 1201-1300 | 7 | 1 | 1 | 1 | 1 | | | | 11 | 14.9 | 16.2 |
| 1101-1200 | 11 | 5 | 4 | 1 | 2 | 1 | | 1 | 25 | 33.8 | 50 |
| 1001-1100 | 1 | 3 | 6 | 4 | 2 | 1 | 1 | | 18 | 24.3 | 74.3 |
| 901-1000 | 3 | 3 | 4 | 3 | 2 | 1 | | 1 | 17 | 23 | 97.3 |
| 801-900 | | 2 | | | | | | | 2 | 2.7 | 100 |
| 701-800 | | | | | | | | | | | |
| Below 700 | | | | | | | | | | | |
| TOTALS | 22 | 15 | 15 | 9 | 7 | 3 | 1 | 2 | 74 | | |
| Percentage | 29.7 | 20.2 | 20.2 | 12.2 | 9.5 | 4.1 | 1.4 | 2.7 | | | |
| % RANKING AT OR ABOVE | 29.7 | 49.9 | 70.1 | 82.3 | 91.8 | 95.9 | 97.3 | 100 | | | |

*Rank not available includes students with decile ranks that would tend to be misleading: (e.g.: ex-servicemen, prep school graduates and other students whose atypical credentials might present a distorted impression.)

## PRE-PROFESSIONAL ARCHITECTURE

### DISTRIBUTION BY COMBINED SAT MATH & VERBAL SCORES & CLASS RANK IN SECONDARY SCHOOLS

1978 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | Rank Not Available* | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501-1600 | | | | | | | | | | | |
| 1401-1500 | | | | | | | | | | | |
| 1301-1400 | | | | | | | | | | | |
| 1201-1300 | | 1 | 3 | 1 | | 1 | | | 6 | 8.6 | 8.6 |
| 1101-1200 | 6 | | 1 | 3 | | 1 | | | 11 | 15.7 | 24.3 |
| 1001-1100 | 4 | 10 | 6 | 4 | 3 | | | | 27 | 38.6 | 62.9 |
| 901-1000 | | 8 | 4 | 7 | 1 | 1 | | 1 | 22 | 31.4 | 94.3 |
| 801-900 | 2 | 1 | 1 | | | | | | 4 | 5.7 | 100 |
| 701-800 | | | | | | | | | | | |
| Below 700 | | | | | | | | | | | |
| TOTALS | 12 | 20 | 15 | 15 | 4 | 3 | | 1 | 70 | | |
| Percentage | 17.1 | 28.6 | 21.4 | 21.4 | 5.7 | 4.3 | | 1.4 | | | |
| % RANKING AT OR ABOVE | 17.1 | 45.7 | 67.1 | 88.6 | 94.3 | 98.6 | | 100 | | | |

1979 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501-1600 | | | | | | | | | | | |
| 1401-1500 | | | | | | | | | | | |
| 1301-1400 | | | | | | | | | | | |
| 1201-1300 | 2 | 1 | | | | | | | 3 | 4.1 | 4.1 |
| 1101-1200 | 5 | 4 | 4 | 1 | 2 | | | | 16 | 21.6 | 25.7 |
| 1001-1100 | 8 | 3 | 5 | 4 | 7 | 1 | | 1 | 29 | 39.2 | 64.9 |
| 901-1000 | 5 | 7 | 6 | 5 | 3 | | | | 26 | 35.1 | 100 |
| 801- 900 | | | | | | | | | | | |
| 701- 800 | | | | | | | | | | | |
| Below 700 | | | | | | | | | | | |
| TOTALS | 20 | 15 | 15 | 10 | 12 | 1 | | 1 | 74 | | |
| Percentage | 27 | 20.2 | 20.2 | 13.5 | 16.2 | 1.4 | | 1.4 | | | |
| % RANKING AT OR ABOVE | 27 | 47.2 | 67.5 | 81.1 | 97.2 | 98.6 | | 100 | | | |

*Rank not available includes students with decile ranks that would tend to be misleading: (e.g.: ex-servicemen, prep school graduates and other students whose atypical credentials might present a distorted impression.)

## INDUSTRIAL ADMINISTRATION/"MAN AND TECHNOLOGY"
## DISTRIBUTION BY COMBINED SAT MATH & VERBAL SCORES & CLASS RANK IN SECONDARY SCHOOLS

1974 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT * AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501-1600 | | | | | | | | | | | |
| 1401-1500 | | | | | | | | | | | |
| 1301-1400 | | | | | | | | | | | |
| 1201-1300 | 1 | | | | | | | | 1 | 2.9 | 2.9 |
| 1101-1200 | 1 | 1 | 1 | 1 | | 2 | | | 6 | 17.7 | 20.6 |
| 1001-1100 | | | 1 | 1 | 1 | | 3 | | 6 | 17.7 | 38.3 |
| 901-1000 | | 1 | 3 | 2 | 2 | | 1 | | 9 | 26.5 | 64.8 |
| 801- 900 | | 1 | 1 | 1 | 1 | 1 | | | 5 | 14.7 | 79.5 |
| 701- 800 | | | | | | 1 | | | 1 | 2.9 | 82.4 |
| Below 700 | 1 | 1 | | | 2 | | | 1 | 5 | 14.7 | 97.1 |
| TOTALS | 3 | 5 | 6 | 5 | 6 | 4 | 4 | 1 | 34 | 100 | 100 |
| Percentage | 8.7 | 14.7 | 17.7 | 14.7 | 17.7 | 11.8 | 11.8 | 2.9 | | | |
| % RANKING AT OR ABOVE | 8.7 | 23.4 | 41.1 | 55.8 | 73.5 | 85.3 | 97.1 | 100 | | | |

1975 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT * AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501-1600 | | | | | | | | | | | |
| 1401-1500 | | | | | | | | | | | |
| 1301-1400 | | | | | | | | | | | |
| 1201-1300 | | 1 | | | | | | 1 | 2 | 10.5 | 10.5 |
| 1101-1200 | | | 1 | | | | | | 1 | 5.2 | 15.7 |
| 1001-1100 | | | 2 | | 2 | 2 | | | 6 | 31.6 | 47.3 |
| 901-1000 | | | | 2 | 1 | 1 | 1 | | 5 | 26.3 | 73.6 |
| 801- 900 | 1 | | | | | 1 | 1 | 1 | 4 | 21.2 | 94.8 |
| 701- 800 | | 1 | | | | | | | 1 | 5.2 | 100 |
| Below 700 | | | | | | | | | | | |
| TOTALS | 1 | 2 | 3 | 2 | 3 | 4 | 2 | 2 | 19 | | |
| Percentage | 5.2 | 10.5 | 15.8 | 10.5 | 15.8 | 21.2 | 10.5 | 10.5 | | | |
| % RANKING AT OR ABOVE | 5.2 | 15.7 | 31.5 | 42 | 57.8 | 79 | 89.5 | 100 | | | |

Rank not available includes students with decile ranks that would tend to be misleading:(e.g.:ex-servicemen, prep school graduates and other students whose atypical credentials might present a distorted impression.)

# INDUSTRIAL ADMINISTRATION/"MAN AND TECHNOLOGY"
# DISTRIBUTION BY COMBINED SAT MATH & VERBAL SCORES & CLASS RANK IN SECONDARY SCHOOLS

1976 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | Rank Not Available | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501–1600 | | | | | | | | | | | |
| 1401–1500 | | | | | | | | | | | |
| 1301–1400 | | | | | | | | | | | |
| 1201–1300 | | | | | | | | | | | |
| 1101–1200 | 1 | 1 | | | | | | | 2 | 9.5 | 9.5 |
| 1001–1100 | | 2 | 2 | | | | | | 4 | 19 | 33.3 |
| 901–1000 | | 1 | 2 | 2 | 1 | 3 | | | 9 | 42.9 | 71.4 |
| 801– 900 | | 2 | | | 1 | 1 | | | 4 | 19 | 90.5 |
| 701– 800 | | | | | | | 1 | | 1 | 4.8 | 95.2 |
| Below 700 | | | 1 | | | | | | 1 | 4.8 | 100 |
| TOTALS | 1 | 6 | 5 | 2 | 2 | 4 | 1 | | 21 | | |
| Percentage | 4.8 | 28.6 | 23.8 | 9.5 | 9.5 | 19 | 4.8 | | | | |
| % RANKING AT OR ABOVE | 4.8 | 33.3 | 57.1 | 66.6 | 76.2 | 95.2 | 100 | | | | |

1977 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | Rank Not Available | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501–1600 | | | | | | | | | | | |
| 1401–1500 | | | | | | | | | | | |
| 1301–1400 | | | | | | | | | | | |
| 1201–1300 | | | | | | | | | | | |
| 1101–1200 | | | | | | 1 | | | 1 | 4.3 | 4.3 |
| 1001–1100 | | | 1 | | 1 | | 1 | | 3 | 13 | 17.3 |
| 901–1000 | | | | 2 | 1 | 1 | 3 | | 7 | 30.4 | 47.7 |
| 801–900 | | 3 | 1 | 2 | | 2 | 1 | | 9 | 39.3 | 87 |
| 701–800 | | | 1 | | 1 | | | | 2 | 8.7 | 95.7 |
| Below 700 | | | 1 | | | | | | 1 | 4.3 | 100 |
| TOTALS | | 3 | 4 | 4 | 3 | 4 | 5 | | 23 | | |
| Percentage | | 13 | 17.4 | 17.4 | 13 | 17.4 | 21.8 | | | | |
| % RANKING AT OR ABOVE | | 13 | 30.4 | 47.8 | 60.8 | 78.2 | 100 | | | | |

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*Rank not available includes students with decile ranks that would tend to be misleading:(e.g.:ex-servicemen, prep school graduates and other students whose atypical credentials might present a distorted impression.)

# INDUSTRIAL ADMINISTRATION/"MAN AND TECHNOLOGY"
## DISTRIBUTION BY COMBINED SAT MATH & VERBAL SCORES & CLASS RANK IN SECONDARY SCHOOLS

1978 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | Rank Not Available | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501-1600 | | | | | | | | | | | |
| 1401-1500 | | | | | | | | | | | |
| 1301-1400 | | | | | | | | | | | |
| 1201-1300 | 1 | | | | | | | | 1 | 2.3 | 2.3 |
| 1101-1200 | | | 1 | | | 1 | | | 2 | 4.5 | 6.8 |
| 1001-1100 | | | 1 | | | 2 | | | 3 | 6.8 | 13.6 |
| 901-1000 | | | | | | 3 | 3 | | 6 | 13.6 | 27.2 |
| 801-900 | 1 | 2 | 4 | 6 | 1 | 2 | 6 | 1 | 23 | 52.3 | 79.5 |
| 701-800 | 1 | | 3 | 1 | 2 | 1 | | 1 | 9 | 20.5 | 100 |
| Below 700 | | | | | | | | | | | |
| TOTALS | 3 | 2 | 9 | 7 | 3 | 9 | 9 | 2 | 44 | | |
| Percentage | 6.8 | 4.5 | 20.5 | 15.9 | 6.8 | 20.5 | 20.5 | 4.5 | | | |
| % RANKING AT OR ABOVE | 6.8 | 11.3 | 31.8 | 47.7 | 54.5 | 75 | 95.5 | 100 | | | |

1979 Freshman Class

| S.A.T. COMBINED SCORE | HIGH SCHOOL DECILE RANK | | | | | | | RANK NOT* AVAILABLE | TOTALS | % | % SCORING AT OR ABOVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7-10 | | | | |
| 1501-1600 | | | | | | | | | | | |
| 1401-1500 | | | | | | | | | | | |
| 1301-1400 | | | | | | | | | | | |
| 1201-1300 | | | | | | | | | | | |
| 1101-1200 | | | | | | 1 | | | 1 | 6.7 | 6.7 |
| 1001-1100 | | | | 1 | | | 1 | | 2 | 13.3 | 20 |
| 901-1000 | | | 1 | 1 | 3 | | 2 | 1 | 8 | 53.3 | 73.3 |
| 801- 900 | | | | 2 | | | | 2 | 4 | 26.7 | 100 |
| 701- 800 | | | | | | | | | | | |
| Below 700 | | | | | | | | | | | |
| TOTALS | | | 1 | 4 | 3 | 1 | 3 | 3 | 15 | | |
| Percentage | | | 6.7 | 26.6 | 20 | 6.7 | 20 | 20 | | | |
| % RANKING AT OR ABOVE | | | 6.7 | 33.3 | 53.3 | 60 | 80 | 100 | | | |

*Rank not available includes students with decile ranks that would tend to be misleading:(e.g.:ex-servicemen, prep school graduates and other students whose atypical credentials might present a distorted impression.)

## NUMBER OF FULL-TIME FIRST-TIME FRESHMEN ENROLLED IN FALL
## BY AGE

| Age Distribution Categories | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|
| 16 Years or Younger | 1 | 0 | 0 | 3 | -- |
| 17 Years | 22 | 18 | 23 | 26 | 13 |
| 18 Years | 597 | 492 | 513 | 540 | 512 |
| 19 Years | 93 | 79 | 67 | 84 | 99 |
| 20 Years | 19 | 21 | 12 | 10 | 11 |
| 21 to 24 Years | 6 | 4 | 15 | 12 | 10 |
| 25 to 34 Years | 3 | 5 | 8 | 4 | 5 |
| 35 to 44 Years | 4 | 3 | 0 | 0 | 0 |
| 45 to 54 Years | 0 | 0 | 0 | 0 | 0 |
| 55 to 64 Years | 0 | 0 | 0 | 0 | 0 |
| 65 Years or Older | 0 | 0 | 0 | 0 | 0 |
| Age Unknown | 0 | 4 | 6 | 1 | 5 |
| TOTAL: ALL STUDENTS | 745 | 626 | 644 | 680 | 655 |

Note: 1974 data unavailable

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## A COMPARISON OF THE 1979 BASIC SKILLS TEST RESULTS
## FOR NJIT AND THE STATE OF NEW JERSEY

```
                NJIT
           -COMPUTATION-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0        650       99.9
  85-89        0        650       99.9
  80-84        0        650       99.9
  75-79      476        650       26.8
  70-74      109        174       10.0
  65-69       35         65        4.6
  60-64       16         30        2.2
  55-59        7         14        1.1
  50-54        5          7         .3
  45-49        2          2         .0
  40-44        0          0         .0
  35-39        0          0         .0

NUMBER      650        75TH PERCENTILE 78
MEAN       75.1        50TH PERCENTILE 76
STD. DEV.   4.9        25TH PERCENTILE 73
        NOT ATTEMPTED     0
```

```
                NJIT
        -ELEMENTARY ALGEBRA-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0        650       99.9
  85-89      204        650       68.6
  80-84      252        446       29.8
  75-79       83        194       17.1
  70-74       73        111        5.8
  65-69       26         38        1.8
  60-64       11         12         .2
  55-59        0          1         .2
  50-54        1          1         .0
  45-49        0          0         .0
  40-44        0          0         .0
  35-39        0          0         .0

NUMBER      650        75TH PERCENTILE 85
MEAN       80.9        50TH PERCENTILE 83
STD. DEV.   6.2        25TH PERCENTILE 77
        NOT ATTEMPTED     0
```

```
         STATE OF NEW JERSEY
           -COMPUTATION-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0      47400       99.9
  85-89        0      47400       99.9
  80-84        0      47400       99.9
  75-79    11674      47400       75.4
  70-74     7584      35726       59.4
  65-69     6282      28142       46.1
  60-64     5366      21860       34.8
  55-59     6199      16494       21.7
  50-54     3965      10295       13.4
  45-49     3228       6330        6.5
  40-44     2299       3102        1.7
  35-39      803        803         .0

NUMBER    47400        75TH PERCENTILE 73
MEAN       64.0        50TH PERCENTILE 65
STD. DEV.  11.3        25TH PERCENTILE 56
        NOT ATTEMPTED   325
```

```
         STATE OF NEW JERSEY
        -ELEMENTARY ALGEBRA-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0      41569       99.9
  85-89     2897      41569       93.0
  80-84     4870      38672       81.3
  75-79     3549      33802       72.8
  70-74     4855      30253       61.1
  65-69     3626      25398       52.4
  60-64     5874      21772       38.2
  55-59     6347      15898       23.0
  50-54     7065       9551        6.0
  45-49     2486       2486         .0
  40-44        0          0         .0
  35-39        0          0         .0

NUMBER    41569        75TH PERCENTILE 75
MEAN       65.4        50TH PERCENTILE 64
STD. DEV.  12.1        25TH PERCENTILE 55
        NOT ATTEMPTED  6156
```

---

## A COMPARISON OF THE 1979 BASIC SKILLS TEST RESULTS
## FOR NJIT AND THE STATE OF NEW JERSEY

```
                NJIT
      -READING COMPREHENSION-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0        650       99.9
  85-89        0        650       99.9
  80-84       20        650       95.9
  75-79      208        630       64.9
  70-74      206        422       33.2
  65-69       91        216       19.2
  60-64       48        125       11.8
  55-59       32         77        6.9
  50-54       13         45        4.9
  45-49       11         32        3.2
  40-44       12         21        1.4
  35-39        9          9        0.0

NUMBER      650        75TH PERCENTILE 75
MEAN       69.7        50TH PERCENTILE 72
STD. DEV.   8.8        25TH PERCENTILE 67
        NOT ATTEMPTED     0
```

```
                NJIT
        -SENTENCE STRUCTURE-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0        650       99.9
  85-89        0        650       99.9
  80-84       45        650       93.1
  75-79      133        605       72.6
  70-74      195        472       42.6
  65-69      142        277       20.8
  60-64       66        135       10.6
  55-59       33         69        5.5
  50-54       12         36        3.7
  45-49       15         24        1.4
  40-44        1          9        1.2
  35-39        8          8        0.0

NUMBER      650        75TH PERCENTILE 76
MEAN       69.7        50TH PERCENTILE 71
STD. DEV.   8.4        25TH PERCENTILE 66
        NOT ATTEMPTED     0
```

```
                NJIT
           -COMPOSITION-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0        650       99.9
  85-89        0        650       99.9
  80-84       37        650       94.3
  75-79      135        613       73.5
  70-74      215        478       40.5
  65-69      136        263       19.5
  60-64       56        127       10.9
  55-59       26         71        6.9
  50-54       18         45        4.2
  45-49       10         27        2.6
  40-44        7         17        1.5
  35-39       10         10         .0

             NUMBER      650
             MEAN       69.3
             STD. DEV.   8.6

          NOT ATTEMPTED     0
```

```
         STATE OF NEW JERSEY
      -READING COMPREHENSION-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0      47584       99.9
  85-89        0      47584       99.9
  80-84     1087      47584       97.7
  75-79     9202      46497       78.4
  70-74    10491      37295       56.3
  65-69     7949      26804       39.6
  60-64     5386      18855       28.3
  55-59     3701      13469       20.5
  50-54     2683       9768       14.9
  45-49     1978       7085       10.7
  40-44     2103       5107        6.3
  35-39     3004       3004        0.0

NUMBER    47584        75TH PERCENTILE 73
MEAN       64.2        50TH PERCENTILE 69
STD. DEV.  12.1        25TH PERCENTILE 57
        NOT ATTEMPTED   341
```

```
         STATE OF NEW JERSEY
        -SENTENCE STRUCTURE-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0      47578       99.9
  85-89        0      47578       99.9
  80-84     2496      47578       94.8
  75-79     5570      45082       83.0
  70-74    10101      39512       61.8
  65-69     8704      29411       43.5
  60-64     6431      20707       30.0
  55-59     4623      14276       20.3
  50-54     3448       9653       13.0
  45-49     2620       6205        7.5
  40-44     1334       3585        4.7
  35-39     2251       2251        0.0

NUMBER    47578        75TH PERCENTILE 73
MEAN       64.2        50TH PERCENTILE 67
STD. DEV.  11.6        25TH PERCENTILE 57
        NOT ATTEMPTED   147
```

```
         STATE OF NEW JERSEY
           -COMPOSITION-

 SCORE                  CUM        %
INTERVAL    FREQ.      FREQ.     BELOW

  90-95        0      47452       99.9
  85-89       87      47452       99.8
  80-84     1891      47365       95.8
  75-79     7420      45474       80.2
  70-74     9962      38054       59.2
  65-69     8260      28092       41.8
  60-64     6184      19832       28.8
  55-59     4438      13648       19.4
  50-54     3230       9210       12.6
  45-49     2270       5980        7.8
  40-44     1631       3710        4.4
  35-39     2079       2079         .0

             NUMBER    47452
             MEAN       64.5
             STD. DEV.  11.5

          NOT ATTEMPTED   273
```

# A COMPARISON OF THE 1979 BASIC SKILLS TEST RESULTS FOR NJIT AND THE STATE OF NEW JERSEY

## NJIT

### -LOGICAL RELATIONSHIPS-

| SCORE INTERVAL | FREQ. | CUM FREQ. | % BELOW |
|---|---|---|---|
| 90-95 | 0 | 650 | 99.9 |
| 85-89 | 0 | 650 | 99.9 |
| 80-84 | 0 | 650 | 99.9 |
| 75-79 | 203 | 650 | 68.8 |
| 70-74 | 221 | 447 | 34.8 |
| 65-59 | 91 | 226 | 20.8 |
| 60-64 | 56 | 135 | 12.2 |
| 55-59 | 20 | 79 | 7.8 |
| 50-54 | 23 | 51 | 4.3 |
| 45-49 | 12 | 28 | 2.5 |
| 40-44 | 5 | 16 | 1.7 |
| 35-39 | 11 | 11 | 0.0 |

| | | | |
|---|---|---|---|
| NUMBER | 650 | 75TH PERCENTILE | 75 |
| MEAN | 69.3 | 50TH PERCENTILE | 72 |
| STD. DEV. | 8.6 | 25TH PERCENTILE | 67 |

NOT ATTEMPTED 0

## NJIT

### -ESSAY-

| SCORE | FREQ. | CUM FREQ. | % BELOW |
|---|---|---|---|
| 08 | 16 | 650 | 97.5 |
| 07 | 56 | 634 | 85.9 |
| 06 | 254 | 578 | 49.8 |
| 05 | 161 | 324 | 25.1 |
| 04 | 126 | 163 | 5.7 |
| 03 | 13 | 37 | 3.7 |
| 02 | 24 | 24 | .0 |
| 01 | 0 | 0 | .0 |
| 00 | 0 | 0 | .0 |

| | |
|---|---|
| NUMBER | 650 |
| MEAN | 5.3 |
| STD. DEV. | 1.2 |

NOT ATTEMPTED 0

## NJIT

### -TOTAL ENGLISH SCORE-

| SCORE INTERVAL | FREQ. | CUM FREQ. | % BELOW |
|---|---|---|---|
| 90-95 | 0 | 650 | 99.9 |
| 85-89 | 0 | 650 | 99.9 |
| 80-84 | 32 | 650 | 95.1 |
| 75-79 | 161 | 618 | 70.3 |
| 70-74 | 213 | 457 | 37.5 |
| 65-69 | 119 | 244 | 19.2 |
| 60-64 | 57 | 125 | 10.5 |
| 55-59 | 24 | 68 | 6.8 |
| 50-54 | 17 | 44 | 4.2 |
| 45-49 | 10 | 27 | 2.6 |
| 40-44 | 8 | 17 | 1.4 |
| 35-39 | 9 | 9 | .0 |

| | |
|---|---|
| NUMBER | 650 |
| MEAN | 69.6 |
| STD. DEV. | 8.6 |

NOT ATTEMPTED 0

## STATE OF NEW JERSEY

### -LOGICAL RELATIONSHIPS-

| SCORE INTERVAL | FREQ. | CUM FREQ. | % BELOW |
|---|---|---|---|
| 90-95 | 0 | 47575 | 99.9 |
| 85-89 | 0 | 47575 | 99.9 |
| 80-84 | 0 | 47575 | 99.9 |
| 75-79 | 9986 | 47575 | 79.0 |
| 70-74 | 11609 | 37589 | 54.6 |
| 65-69 | 6424 | 25980 | 41.1 |
| 60-64 | 5963 | 19556 | 28.6 |
| 55-59 | 3366 | 13593 | 21.5 |
| 50-54 | 3372 | 10227 | 14.4 |
| 45-49 | 2531 | 6855 | 9.1 |
| 40-44 | 1489 | 4324 | 6.0 |
| 35-39 | 2835 | 2835 | 0.0 |

| | | | |
|---|---|---|---|
| NUMBER | 47575 | 75TH PERCENTILE | 74 |
| MEAN | 64.2 | 50TH PERCENTILE | 68 |
| STD. DEV. | 11.8 | 25TH PERCENTILE | 57 |

NOT ATTEMPTED 130

## STATE OF NEW JERSEY

### -ESSAY-

| SCORE | FREQ. | CUM FREQ. | % BELOW |
|---|---|---|---|
| 08 | 1015 | 47593 | 97.9 |
| 07 | 3956 | 46578 | 89.6 |
| 06 | 14979 | 42622 | 58.1 |
| 05 | 11179 | 27643 | 34.6 |
| 04 | 10747 | 16464 | 32.0 |
| 03 | 2999 | 5717 | 5.7 |
| 02 | 2622 | 2718 | .2 |
| 01 | 0 | 96 | .2 |
| 00 | 96 | 96 | .0 |

| | |
|---|---|
| NUMBER | 47593 |
| MEAN | 5.0 |
| STD. DEV. | 1.4 |

NOT ATTEMPTED 132

## STATE OF NEW JERSEY

### -TOTAL ENGLISH SCORE-

| SCORE INTERVAL | FREQ. | CUM FREQ. | % BELOW |
|---|---|---|---|
| 90-95 | 0 | 47446 | 99.9 |
| 85-89 | 2 | 47446 | 99.9 |
| 80-84 | 1695 | 47444 | 96.4 |
| 75-79 | 7901 | 45749 | 79.8 |
| 70-74 | 10154 | 37848 | 58.4 |
| 65-69 | 8216 | 27694 | 41.1 |
| 60-64 | 5973 | 19478 | 28.5 |
| 55-59 | 4210 | 13505 | 19.6 |
| 50-54 | 2954 | 9295 | 13.4 |
| 45-49 | 2191 | 6341 | 8.7 |
| 40-44 | 1612 | 4150 | 5.3 |
| 35-39 | 2538 | 2538 | .0 |

| | |
|---|---|
| NUMBER | 47446 |
| MEAN | 64.4 |
| STD. DEV. | 11.8 |

NOT ATTEMPTED 279

## A COMPARISON OF THE BASIC SKILLS TEST RESULTS FOR NJIT FOR THE YEARS 1978 AND 1979

| | 1979 | | 1978 | |
|---|---|---|---|---|
| | Mean | Standard Deviation | Mean | Standard Deviation |
| Reading Comprehension | 69.7 | 8.8 | 69.4 | 8.6 |
| Sentence Structure | 69.7 | 8.4 | 68.5 | 8.8 |
| Logical Relations | 69.3 | 8.6 | 68.8 | 9.1 |
| Essay | 5.3 | 1.2 | 5.3 | 1.2 |
| Composition | 69.3 | 8.6 | 68.2 | 8.8 |
| Total English Score | 69.6 | 8.6 | 68.7 | 8.7 |
| Computation | 75.1 | 4.9 | 74.2 | 4.9 |
| Elementary Algebra | 80.9 | 6.2 | 79.0 | 6.6 |

# Appendix C

# HISTORICAL STUDENT PROFILE DATA

1974-1979

Sources of Data:

Office of the Registrar
Placement Office

## FALL ENROLLMENTS BY DIVISION
### FULL-TIME AND PART-TIME

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| FULL-TIME UNDERGRAD.[1] | 2632 | 2962 | 3102 | 3117 | 2919 | 3070 |
| PART-TIME UNDERGRAD.[2] | 849 | 952 | 956 | 962 | 1275 | 1481 |
| SUB-TOTAL | 3481 | 3914 | 4058 | 4079 | 4194 | 4551 |
| FULL-TIME GRAD.[3] | 137 | 168 | 145 | 134 | 101 | 104 |
| PART-TIME GRAD. | 1123 | 1032 | 1002 | 966 | 817 | 936 |
| SUB-TOTAL* | 1260 | 1200 | 1147 | 1100 | 918 | 1040 |
| MAIN. REGIS. GRAD. STU. | 103 | 84 | 84 | 77 | 109 | 78 |
| DIV. OF TECH.** | 623 | 618 | 623 | 641 | 562 | 549 |
| TOTAL*** | 5364 | 5732 | 5828 | 5820 | 5674 | 6140 |

* Includes inactive students maintaining registration as shown on next line.
** BSET enrollments are included with undergraduate
*** Does not include Continuing Education or Grad. Stu. Main. Regis.

[1] 12 or more credits (Prior to 1977 all day students are included)

[2] 11 or fewer credits (Prior to 1977 this line shows evening students)

[3] Not employed outside the Institute; full commitment to graduate program

Note: Enrollment breakdown by program is tabulated on pages 4-11 and 4-12.

## UNDERGRADUATE DEGREE AND CERTIFICATE STUDENTS
## DISTRIBUTION BY AGE

| Age Category | Fall: 1975* | 1976* | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|
| Under 18 | | 19(0) | 42(0) | 48(9) | 40(8) |
| 18-20 {15-19† } | 1862(353) | 1723(9) | 1508(114) | 1523(66) | 1597(68) |
| 21-24 {20-24† } | 888(460) | 877(171) | 949(458) | 1009(341) | 1065(352) |
| 25-34 {25-29† } | 120(94) | 407(605) | 281(808) | 254(534) | 280(582) |
| 35-44 {30-34† } | 19(33) | 50(131) | 16(167) | 17(106) | 17(136) |
| 45-54 {35-39† } | 14(7) | 34(10) | 5(30) | 1(18) | 2(24) |
| 55-64 {40-59† } | 3(8) | 2(5) | 1(8) | 1(0) | 1(1) |
| 65 & Older | | | 0(1) | 0(0) | -- -- |
| Unknown age | 19(37) | 20(5) | 26(53) | 26(574) | 60(720) |
| Total students surveyed | 2925(992) | 3132(936) | 2828(1649) | 2879(1648) | 3062(1891) |

*DOT Certificate program students not included prior to 1977.

## GRADUATE DEGREE STUDENTS
## DISTRIBUTION BY AGE

| Age Category | Fall: 1975 | 1976* | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|
| Under 18 | | 0 | 0(0) | 0(2) | 0(3) |
| 18-20 {15-19† } | 0(0) | 0 | 0(1) | 0(0) | 1(1) |
| 21-24 {20-24† } | 94(443) | 195 | 19(103) | 32(114) | 34(116) |
| 25-34 {25-29† } | 51(301) | 554 | 34(486) | 47(437) | 49(537) |
| 35-44 {30-34† } | 8(95) | 141 | 7(114) | 8(113) | 4(148) |
| 45-54 {35-39† } | 10(35) | 22 | 1(21) | 1(18) | 1(34) |
| 55-64 {40-59† } | 3(8) | 11 | 1(1) | 1(1) | 1(11) |
| 65 & Older | | | 0(0) | 0(0) | 0(0) |
| Unknown age | 2(20) | 163 | 0(0) | 18(0) | 12(16) |
| Total Students surveyed | 168(902) | 1086 | 62(726) | 107(685) | 102(866) |

*No breakdown by full-time/part-time available for 1976

Notes
1974 Data not available.
†Age brackets for 1975 only.
Figures in parentheses are evening students 1975-76; part-time students 1977-79
Other figures are day students 1975-76; full-time students 1977-79

## PERCENTAGE DISTRIBUTION OF ENROLLMENT BY RACIAL/ETHNIC GROUP: 1972, 1976, AND 1979

| STUDENT GROUP | --- 1972 --- | | | --- 1976 --- | | | --- 1979 --- | | |
|---|---|---|---|---|---|---|---|---|---|
| | BLK. | HISP. | OTHER | BLK. | HISP. | OTHER | BLK. | HISP. | OTHER |
| FULL-TIME UNDERGRAD. | 3.9 | 4.7 | 91.4 | 4.9 | 5.1 | 90 | 6.1 | 5.5 | 88.4 |
| PART-TIME UNDERGRAD. | 4.1 | 3.5 | 92.4 | 4.4 | 2.4 | 93.2 | 6.0 | 4.6 | 89.4 |

C-3

## PERCENTAGE DISTRIBUTION OF ENROLLMENT BY SEX: 1972, 1976, AND 1979

| STUDENT GROUP | --- 1972 --- | | --- 1976 --- | | --- 1979 --- | |
|---|---|---|---|---|---|---|
| | MALE | FEMALE | MALE | FEMALE | MALE | FEMALE |
| FULL-TIME UNDERGRAD. | 97.7 | 2.3 | 92.0 | 7.0 | 90.3 | 9.7 |
| PART-TIME UNDERGRAD. | 99.2 | 0.8 | 96.9 | 3.1 | 92.1 | 7.9 |

Sources: U.S. Office of Education Forms OS-34 (1972) and 2300-2.3 (1976); Registrar's Office (1979)

Note: For complete 1977-1979 data, see page 3-5.

NEW JERSEY INSTITUTE OF TECHNOLOGY
OFFICE OF THE REGISTRAR
1979 FALL REGISTRATION ANALYSIS
(AS OF OCTOBER 16, 1979)
FULL TIME STUDENTS

| | FRESHMEN | | SOPHOMORES | | JUNIORS | | SENIORS | 5TH YEAR ARCH | GRAND TOTAL | GRAND TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TOTAL | NEW | TOTAL | NEW | TOTAL | NEW | TOTAL | TOTAL | ALL STUDENTS | NEW | |
| CHE | 143 | 91 | 92 | 5 | 122 | 0 | 64 | 0 | 421 + 17 | 96 + 2 | CHE |
| CE | 137 | 88 | 58 | 5 | 66 | 0 | 67 | 0 | 328 - 10 | 93 + 3 | CE |
| CIS | 118 | 87 | 41 | 1 | 65 | 0 | 13 | 0 | 237 + 65 | 88 + 32 | CIS |
| EE | 260 | 161 | 122 | 3 | 137 | 1 | 86 | 0 | 605 + 30 | 165 - 23 | EE |
| ESC | 29 | 22 | 10 | 2 | 8 | 0 | 4 | 0 | 51 + 4 | 24 + 7 | ESC |
| IE | 35 | 18 | 20 | 1 | 47 | 1 | 14 | 0 | 116 + 4 | 20 - 5 | IE |
| ME | 215 | 151 | 122 | 12 | 179 | 0 | 58 | 0 | 574 + 46 | 163 + 24 | ME |
| ARCH | 189 | 105 | 74 | 4 | 69 | 1 | 31 | 17 | 380 + 25 | 110 + 7 | ARCH |
| BSIA | 33 | 17 | 34 | 8 | 46 | 0 | 14 | 0 | 127 + 16 | 25 + 5 | BSIA |
| MAN & TECH | 16 | 10 | 12 | 1 | 8 | 0 | 1 | 0 | 37 - 18 | 11 - 26 | MAN & TECH |
| ENGR. TECH | 13 | 6 | 5 | 0 | 101 | 37 | 41 | 0 | 160 - 27 | 43 - 17 | ENGR. TECH. |
| NON-MATRIC | 0 | 0 | 0 | 0 | 33 | 15 | 0 | 0 | 33 - 7 | 15 + 4 | NON-MATRIC |
| TOTAL | 1188 | 756 | 590 | 42 | 881 | 55 | 393 | 17 | 3069 + 146 | 853 + 13 | TOTAL |

Total increase over 78 Fall + 5%

No significant new student increase over 78 Fall

NOTE

1. Full time status requires twelve (12) or more credits.
2. Full time students are registered for an aveage of 16.2 credits per student,
3. Freshman status equals 0-34 credits engineering; 0-30 non-engineering.
4. Sophomore status equals 35-62 credits engineering; 31-60 non engineering,
5. Junior status equals 63-103 credits engineering; 61-94 non engineering.
6. Senior status equals 104+ credits engineering; according to major for non-engineering
7. Total Full Time Credits - 49,506.
8. Non-matrics not included in calculation of new student difference between 78 and 79 Fall.

# NEW JERSEY INSTITUTE OF TECHNOLOGY
# OFFICE OF THE REGISTRAR
# 1979 FALL REGISTRATION ANALYSIS
# PART TIME STUDENTS
(AS OF OCTOBER 16, 1979)

| | FRESHMEN | | SOPHOMORES | | JUNIORS | | SENIORS | 5TH YEAR ARCH | GRAND TOTAL ALL STUDENTS | | GRAND TOTAL NEW | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TOTAL | NEW | TOTAL | NEW | TOTAL | NEW | TOTAL | TOTAL | | | | | |
| CHE | 28 | 11 | 31 | 7 | 31 | 1 | 19 | 0 | 109 | + 15 | 19 | + 7 | CHE |
| CE | 46 | 13 | 29 | 1 | 34 | 0 | 26 | 0 | 135 | + 19 | 14 | - 4 | CE |
| CIS | 38 | 11 | 15 | 0 | 10 | 0 | 18 | 0 | 89 | + 16 | 11 | - 4 | CIS |
| EE | 57 | 22 | 49 | 8 | 58 | 0 | 46 | 0 | 210 | + 20 | 30 | + 9 | EE |
| ESC | 6 | 3 | 6 | 0 | 9 | 0 | 4 | 0 | 25 | 0 | 3 | 0 | ESC |
| IE | 11 | 4 | 10 | 1 | 17 | 0 | 13 | 0 | 51 | + 4 | 5 | + 2 | IE |
| ME | 57 | 29 | 21 | 3 | 54 | 0 | 40 | 0 | 172 | + 1 | 32 | +13 | ME |
| ARCH | 11 | 2 | 7 | 1 | 5 | 1 | 4 | 3 | 30 | + 1 | 4 | 0 | ARCH |
| BSIA | 7 | 3 | 12 | 3 | 14 | 0 | 8 | 0 | 41 | - 12 | 6 | - 9 | BSIA |
| MAN & TECH | 5 | 0 | 2 | 0 | 1 | 0 | 2 | 0 | 10 | + 7 | 0 | - 2 | MAN & TECH |
| ENGR. TECH | 22 | 6 | 13 | 1 | 109 | 48 | 86 | 0 | 310 | + 22 | 55 | 0 | ENGR. TECH |
| NON-MATRIC | 0 | 0 | 0 | 0 | 280 | 178 | 0 | 0 | 280 | + 94 | 178 | +56 | NON-MATRIC |
| TOTAL | 288 | 104 | 195 | 25 | 710 | 228 | 266 | 3 | 1462 | + 187 | 356 | +68 | TOTAL |
| | | | | | | | | | Total increase over 78 Fall 9% | | Total new student increase over 78 Fall 6% | | |

NOTE
1. Part time status requires eleven (11) or less credits.
2. Part time students are registered for an average of 6.0 credits.
3. Total part time credits 8,874.
4. 71 AFROTC students subtracted from Grand Total before calculation of increase between 78 and 79 Fall.
5. Non- matrics not included in calculation of new student increase between 78 and 79 Fall.

## FOREIGN VISA STUDENT ENROLLMENT

### FALL HEADCOUNT

| | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|
| Undergraduate | 137 | 138 | 117 | 126 | 125 |
| Graduate | 58 | 41 | 38 | 40 | 41 |
| TOTAL | 195 | 179 | 155 | 166 | 166 |

NOTE: DOT Certificate Program students not included.

## SENIOR PLACEMENT - 1978-1980

| | 1978 | 1979 | 1980 |
|---|---|---|---|
| PER CENT OF GRADUATES PROFESSIONALLY PLACED (Includes Industry, Civil Service, Graduate School, and Military) | 59.7 | 59.5 | 64.1 |
| PER CENT PLACED - OF THOSE UTILIZING PLACEMENT SERVICES (Includes Industry, Civil Service, Graduate School, and Military) | 60.9 | 67.8 | 64.0 |
| PER CENT PLACED - OF THOSE RESPONDING TO SURVEY (Includes Industry, Civil Service, Graduate School, and Military) | 74.0 | 75.8 | 83.2 |
| PER CENT OF STUDENTS ACCEPTING POSITIONS WITH COMPANIES OTHER THAN THOSE THAT RECRUITED | 7.6[1] | 13.3[1] | 5.6[1] |
| PER CENT NOT ACCEPTING HIGHEST OFFER | 14.0[1] | 14.2[1] | 16.0[1] |
| AVERAGE NUMBER OF INTERVIEWS PER STUDENT | 11.3[1] | 12.3[1] | 14.0[1] |
| AVERAGE NUMBER OF OFFERS PER STUDENT | 1.8[1] | 1.6[1] | 1.6[1] |
| PER CENT LEAVING NEW JERSEY (Includes Private Industry, Civil Service and Graduate School) | 20.6[1] | 22.5[1] | 23.2[1] |
| NUMBER OF STATES REPRESENTED (Private Industry, Civil Service and Graduate School) | 22 | 22[2] | 23[3] |

---

[1] Based on Day Graduates taking interviews.

[2] Includes 3 employed out of the country.

[3] Includes 2 employed out of the country.

Source: Placement Office

## NJIT CLASS OF 1979

As of July 1, 1979

### Breakdown of Graduates by Department

| Dept. | Day Grads | Eve. | Not in College | % Employed | % Grad School | % Military | % No Info. | % Not Employed |
|---|---|---|---|---|---|---|---|---|
| CH.E. | 85 | 1 | 9 | 58.8 | 3.5 | 1.2 | 10.6 | 25.9 |
| CE | 52 | 9 | 25 | 46.2 | 3.8 | 3.8 | 25.0 | 21.2 |
| EE | 62 | 3 | 20 | 75.8 | 4.8 | 0.0 | 11.3 | 8.1 |
| IE | 14 | 4 | 5 | 78.7 | 7.1 | 0.0 | 7.1 | 7.1 |
| ME | 55 | 11 | 25 | 67.3 | 3.6 | 5.5 | 12.7 | 10.9 |
| ES | 5 | 1 | 4 | 60.0 | 0.0 | 0.0 | 20.0 | 20.0 |
| CS | 13 | 0 | 5 | 61.5 | 7.7 | 0.0 | 15.4 | 15.4 |
| BSET | 55 | 48 | 30 | 36.4 | 1.8 | 1.8 | 34.5 | 25.5 |
| M&T | 3 | 0 | 1 | 33.3 | 0.0 | 0.0 | 66.7 | 0.0 |
| BSIA | 12 | 7 | 13 | 25.0 | 25.0 | 0.0 | 50.0 | 0.0 |
| ARCH. | 54 | 0 | 4 | 29.6 | 1.9 | 0.0 | 38.9 | 29.6 |

Source: Placement Office

## AVERAGE STARTING MONTHLY SALARIES

## SPRING 1974-1979

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | % Increase 1975-1979 |
|---|---|---|---|---|---|---|---|
| **CHEMICAL** | $1043 | $1199 | $1275 | $1405 | $1498 | $1664 | 38.8 |
| **CIVIL** | 962 | 1023 | 1030 | 1192 | 1253 | 1407 | 37.5 |
| **COMPUTER SCIENCE** | 933 | 983 | 986 | 1070 | 1230 | 1396 | 42.0 |
| **ELECTRICAL** | 997 | 1100 | 1110 | 1250 | 1360 | 1535 | 39.5 |
| **ENGRG. SCIENCE** | 987 | --- | --- | --- | --- | --- | --- |
| **INDUSTRIAL** | 966 | 1025 | 1082 | 1220 | 1390 | 1441 | 40.6 |
| **MECHANICAL** | 1000 | 1089 | 1200 | 1295 | 1397 | 1548 | 42.1 |
| **ENGINEERING TECH.** | 1016 | 1085 | 1091 | 1165 | 1246 | 1424 | 3.12 |
| **INDUSTRIAL ADMIN.** | --- | --- | --- | --- | --- | --- | --- |
| **MAN AND TECH.** | --- | --- | --- | --- | --- | --- | --- |
| **ARCHITECTURE** | --- | --- | --- | --- | --- | 992 | --- |
| ALL DEPARTMENTS | $ 995 | $1097 | $1158 | $1280 | $1360 | $1513 | 37.9 |

Sample too small to average : ---

Source: Placement Office

# Appendix D

# HISTORICAL DATA ON
# ENROLLMENTS AND DEGREES AWARDED
# 1974-1979

Sources of data:

Registrar's Office
Graduate Division Office
Division of Technology Office

## DAY UNDERGRADUATE ENROLLMENT

### FALL 1974-1977

| | CHE | CE | CIS | EE | ESC | IE | ME | ARCH | BSIA | M&T | BSET | U.D. | N.M | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1974 | 270 | 523 | 104 | 590 | 79 | 117 | 405 | 253 | 99 | 12 | 118 | 32 | 30 | 2632 |
| 1975 | 327 | 468 | 126 | 604 | 78 | 106 | 474 | 363 | 112 | 33 | 204 | 30 | 37 | 2962 |
| 1976 | 351 | 435 | 126 | 600 | 76 | 111 | 466 | 389 | 126 | 35 | 229 | 47 | 111 | 3102 |
| 1977 | 435 | 405 | 162 | 598 | 85 | 104 | 531 | 386 | 134 | 40 | 164 | 25 | 48 | 3117 |

## FULL-TIME* UNDERGRADUATE ENROLLMENT

### FALL 1978-1979

| | CHE | CE | CIS | EE | ESC | IE | ME | ARCH | BSIA | M&T | BSET | U.D. | N.M | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | 404 | 338 | 171 | 575 | 47 | 112 | 528 | 351 | 111 | 55 | 187 | -- | 40 | 2919 |
| 1979 | 421 | 328 | 237 | 605 | 51 | 116 | 574 | 380 | 127 | 37 | 160 | -- | 33 | 3069 |

*12 or more credits. (1978 avg. credits = 16.4)

## EVENING UNDERGRADUATE ENROLLMENT

FALL 1974-1977

| | CHE | CE | CIS | EE | ESC | IE | ME | ARCH | BSIA | M&T | BSET | U.D. | N.M | TOTAL | AVG. CR. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1974 | 57 | 147 | 33 | 171 | 12 | 80 | 111 | -- | 8 | 1 | 178 | 6 | 45 | 849 | 7.5 |
| 1975 | 64 | 129 | 35 | 173 | 14 | 71 | 123 | -- | 25 | 3 | 225 | 0 | 90 | 952 | 7.1 |
| 1976 | 58 | 123 | 32 | 158 | 15 | 65 | 122 | -- | 26 | 5 | 252 | 6 | 85 | 956 | 6.6 |
| 1977 | 72 | 103 | 50 | 164 | 17 | 46 | 126 | -- | 34 | 3 | 271 | 14 | 62 | 962 | --- |

## PART-TIME* UNDERGRADUATE ENROLLMENT

FALL 1978-1979

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | 94 | 116 | 73 | 190 | 25 | 47 | 171 | 29 | 53 | 3 | 288 | -- | 186 | 1275 | 6.3 |
| 1979 | 109 | 135 | 89 | 210 | 25 | 51 | 172 | 30 | 41 | 10 | 310 | -- | 280 | 1462 | 6.0 |

---

*11 or fewer credits.

## FALL ENROLLMENTS IN M.S. ENGINEERING PROGRAMS

(FIGURES IN PARENTHESES REPRESENT NEW STUDENTS)

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| ChE | 71(23) | 72(28) | 73(17) | 73(28) | 67(22) | 76(26) |
| CE | 161(51) | 149(38) | 132(27) | 131(37) | 106(28) | 124(37) |
| EnE | 84(39) | 97(30) | 84(24) | 89(28) | 76(25) | 83(20) |
| EE | 121(46) | 126(31) | 114(28) | 110(24) | 88(28) | 85(20) |
| I/ME* | 216(59) | 210(53) | 174(28) | 159(34) | 157(45) | 158(40) |
| ME | 80(33) | 93(29) | 76(19) | 65(14) | 61(17) | 76(31) |
| TOTAL | 733(251) | 747(209) | 653(143) | 627(165) | 655(165) | 602(174) |

*Industrial and Management Engineering combined.

## FALL ENROLLMENTS IN OTHER M.S. PROGRAMS

(FIGURES IN PARENTHESES REPRESENT NEW STUDENTS)

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| Appl. Chem | 31(7) | 31(3) | 21(3) | 23(9) | 15(2) | 24(8) |
| Comp. Sci. | 78(32) | 95(40) | 110(27) | 102(18) | 88(18) | 176(104) |
| Appl. Math | 24(11) | 20(1) | 13(6) | 11(3) | 6(1) | 4(2) |
| Appl. Sci. | 79(30) | 71(11) | 46(8) | 50(17) | 35(8) | 30(7) |
| Nucl.* P.S. | | 10(10) | 10 | | | |
| O. & S. Sci. | | | 13(12) | 20(5) | 15(5) | 12(0) |
| TOTAL | 212(80) | 277(65) | 213(56) | 206(52) | 159(34) | 246(121) |

*Nuclear Power Systems. Special program for Iranian students.

## FALL ENROLLMENTS IN DR. ENGRG. SCI. PROGRAM

(FIGURES IN PARENTHESES REPRESENT NEW STUDENTS)

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| ChE | 9(3) | 11(3) | 16(5) | 15(3) | 20(5) | 15(2) |
| CE | 6(1) | 6(1) | 8(4) | 3(1) | 4(1) | 3(2) |
| EE | 31(4) | 24(3) | 25(2) | 25(2) | (21)(1) | 12(0) |
| ME | 17(5) | 18(1) | 10(0) | 6(0) | 6(3) | 6(2) |
| TOTAL | 63(13) | 59(8) | 59(11) | 49(6) | 51(10) | 36(6) |

## FALL ENROLLMENTS IN DEG. OF ENGINEER PROGRAM

(FIGURES IN PARENTHESES REPRESENT NEW STUDENTS)

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| ChE | 0(0) | 1(0) | 1(0) | 1(0) | 1(0) | 1(0) |
| CE | 0(0) | 0(0) | 4(1) | 3(0) | 1(0) | 0(0) |
| EE | 3(1) | 2(0) | 4(0) | 3(1) | 1(0) | 1(0) |
| ME | 1(0) | 1(0) | 1(0) | 1(0) | 0(0) | 0(0) |
| TOTAL | 4(1) | 4(0) | 10(1) | 8(1) | 3(0) | 2(0) |

## DIVISION OF TECHNOLOGY HEADCOUNT

| | CERTIFICATE PROGRAMS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Arch Tech | Const Tech | Elec Tech | Mech Tech | Plastics Tech | CERTIF. TOTALS | Bridge & Individual Courses | DOT GRAND TOTAL |
| 1975 | 51 | 103 | 170 | 137 | 28 | 489 | 129 | 618 |
| 1976 | 54 | 102 | 168 | 136 | 41 | 501 | 122 | 623 |
| 1977 | 55 | 109 | 151 | 165 | 36 | 516 | 125 | 641 |
| 1978 | 41 | 79 | 148 | 139 | 34 | 441 | 121 | 562 |
| 1979 | 38 | 90 | 153 | 161 | 38 | 480 | 69 | 549 |

## DEGREES AWARDED
## (1974 - 1980)
## BY PROGRAM

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|---|---|---|
| Engineering Science Doctorate | | | | | | | |
| Chemical Engineering | - | 4 | 2 | 1 | 1 | 0 | 2 |
| Civil & Environmental Engrg. | - | 1 | 1 | 1 | 1 | 1 | 1 |
| Electrical Engineering | 3 | 2 | 3 | 2 | 2 | 3 | 2 |
| Mechanical Engineering | - | 1 | 1 | 3 | 3 | 2 | - |
| Total Doctorates | 3 | 8 | 7 | 7 | 7 | 6 | 5 |
| Degree Of Engineer | - | - | 2 | 2 | 1 | - | - |
| Master of Science | | | | | | | |
| Chemical Engineering | 20 | 24 | 12 | 18 | 13 | 16 | 13 |
| Civil Engineering | 33 | 37 | 38 | 35 | 32 | 28 | 31 |
| Computer Science | 15 | 14 | 17 | 13 | 14 | 7 | 13 |
| Electrical Engineering | 27 | 25 | 34 | 29 | 30 | 20 | 11 |
| Engineering Science | 13 | 18 | 8 | 7 | 6 | 3 | 4 |
| Environmental Engineering | 8 | 21 | 26 | 28 | 21 | 17 | 24 |
| Industrial Engineering | - | 3 | 2 | 4 | 4 | 1 | - |
| Management Engineering | 40 | 41 | 39 | 32 | 28 | 33 | 30 |
| Mechanical Engineering | 24 | 7 | 16 | 15 | 19* | 19 | 17 |
| Applied Mathematics | - | - | 8 | 3 | 1 | 5 | 3 |
| Applied Science | - | 16 | 23 | 16 | 13 | 7 | 8 |
| Total Masters Degreees | 180 | 206 | 223 | 200 | 191* | 156 | 156 |
| Bachelor of Science | | | | | | | |
| Chemical Engineering | 88 | 75 | 69 | 54 | 79 | 102 | 74 |
| Civil & Environmental Engrg. | 173 | 173 | 131 | 127 | 104 | 101 | 72 |
| Computer Science | 21 | 27 | 16 | 14 | 18 | 18 | 25 |
| Electrical Engineering | 166 | 138 | 117 | 116 | 105 | 91 | 92 |
| Industrial Administration | - | 10 | 23 | 32 | 26 | 42 | 36 |
| Industrial Engineering | 103 | 44 | 50 | 47 | 29 | 25 | 27 |
| Mechanical Engineering | 141 | 111 | 90 | 76 | 72 | 109 | 115 |
| Engineering Science | 37 | 23 | 13 | 16 | 10 | 11 | 7 |
| Man & Technology | - | - | 3 | 2 | 3 | 4 | 4 |
| Engineering Technology | 30 | 76 | 83 | 164 | 136 | 140 | 104 |
| Bachelor of Architecture | - | - | - | 17 | 40 | 62 | 43 |
| Total Bachelors Degrees | 759 | 677 | 595 | 665 | 622 | 705 | 599 |
| Division of Technology (Certificates, Total) | 74 | 58 | 80 | 71 | 81 | 52 | 49 |
| GRAND TOTAL | 1016 | 949 | 907 | 945 | 902* | 919 | 809 |

Includes graduates of preceding October
Source: HEGIS Form 2300-2.1 and Graduate Division Records
*Does not include 10 Iranian students in Nuclear Power Systems

## CERTIFICATES AWARDED
## (1974 - 1980)

## DIVISON OF TECHNOLOGY

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|---|---|---|
| Certificate Programs | | | | | | | |
| Architectural Technology | 5 | 4 | 9 | 9 | 5 | 7 | 7 |
| Construction Technology | 17 | 10 | 9 | 9 | 13 | 7 | 8 |
| Electrical Technology | 23 | 13 | 20 | 20 | 31 | 14 | 17 |
| Mechanical Technology | 12 | 25 | 14 | 14 | 25 | 23 | 17 |
| Plastics Technology | 10 | 4 | 3 | 3 | 2 | 1 | - |
| *Other Ind Chemical Tech. | 5 | - | 1 | *2 | - | - | - |
| Tool Design | 1 | 1 | 1 | - | - | - | - |
| | 73 | 57 | 57 | 57 | 76 | 52 | 49 |

*Industrial Chemical Technology (1)
Tool Design (1)

## Appendix E

# PROJECTIONS OF N.J. HIGH SCHOOL GRADUATES
# AND
# TECHNICAL EMPLOYMENT
# 1980-1995

Sources of Data:

N.J. Department of Higher Education
N.J. Department of Labor and Industry

## PROJECTED N.J. HIGH SCHOOL GRADUATES BY COUNTY

### TOTALS FOR NJIT 7-COUNTY REGION AND FOR ENTIRE STATE

```
                              NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROLL
                                                                                      DATE:  3-10-80     PAGE A
COMPUTATION OF FTFTF USING ENROLLMENTS 1977-1979 WITH 3,2,1 WEIGHTING,  03/10/80
RUN PARAMETERS:       IYR1 IYR2 IYR3 IYR4 ODS1 ODS2 JYR1 JYR2 KYR1 KYR2
                        4    9   10   25    6    2    7   25   10   19
COUNTY HIGH-SCHOOL GRADUATES, GIVEN DATA FOR YEARS 1976 TO 1994

FALL    1976  1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994
SPRG    1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995

ESSEX
        9647  9420  9409  9080  9250  9329  8879  8634  8077  7723  7750  7586  7266  6536  5958  5894  5642  5495  5546

BERGEN
       13114 12885 12998 12079 11707 11613 10956 10236  9700  9095  9037  9026  8053  7170  6437  6751  6668  6605  6665

UNION
        7005  6955  7116  6675  6479  6205  6069  5706  5265  5092  5202  5108  4771  4221  3707  3735  3748  3703  3793

PASSAIC
        5331  5171  5155  5039  5102  4933  4941  4670  4512  4242  4203  4327  4066  3667  3429  3326  3281  3157  3308

HUDSON
        5018  5343  5085  5020  5051  5046  4722  4753  4483  4243  4200  4247  4071  3822  3524  3506  3310  3222  3266

MORRIS
        6577  6485  6740  6687  6447  6523  6306  6071  5718  5570  5562  5663  5187  4542  4077  4041  3872  3826  4112

MIDDLSX
        8691  8706  8682  8331  8315  8432  7848  7534  7054  6659  6645  6551  6065  5400  4738  4876  4611  4557  4654

*SUBTOT*
       55383 54973 55185 52911 52351 52081 49721 47604 44810 42624 42599 42508 39479 35358 31870 32129 31132 30565 31394

MONMOUTH
        7132  7142  7240  7144  7144  7217  6867  6273  6019  5692  5781  5793  5356  4638  4151  4497  4189  4201  4207

SOMERSET
        3643  3669  3673  3472  3403  3423  3129  2895  2731  2560  2647  2532  2424  2144  1878  1984  1864  1980  1959

OCEAN
        3377  3585  3760  3973  4187  4042  4132  3941  3859  3802  4155  4347  4463  4080  3955  4701  4709  4673  5127

MERCER
        3459  3370  3407  3325  3368  3350  3202  3158  3077  2988  2991  3059  2928  2555  2377  2350  2336  2249  2348

NRTHWST
        2718  2613  2763  2875  2894  3050  2918  2836  2793  2734  2991  2966  2964  2741  2539  2885  2862  3045  3252

SOUTHERN
       21683 21691 22128 21917 21441 21503 20655 19488 19131 18506 18488 19585 19048 16917 15439 16120 15841 15857 16694

*TOTAL*
       97395 97043 98156 95617 94768 94666 90624 86195 82420 78906 79652 80790 76662 68433 62209 64666 62933 62550 64981
```

E-1

## 1977-1978 ENGINEERING AND ENGINEERING TECHNOLOGY ENROLLMENTS

### COMPARISON OF NATIONAL, NEW JERSEY, AND NJIT

| | ENGINEERING | | | ENGINEERING TECHNOLOGY | | |
|---|---|---|---|---|---|---|
| **ENGINEERING ENROLLMENTS** | FALL 1977 | FALL 1978 | PER CENT INCREASE | FALL 1977 | FALL 1978 | PER CENT INCREASE |
| **NATIONAL** | | | | | | |
| Freshmen, Full-Time | 88780 | 96805 | 9.0 | 31558 | 30757 | -2.5 |
| Undergrad, Full-Time | 289248 | 311237 | 7.6 | 64542 | 62589 | -3.0 |
| Undergrad, Part-Time | 20634 | 22843 | 10.7 | 14079 | 16949 | 20.4 |
| Total Undergrad. | 309882 | 334080 | 7.8 | 78621 | 79538 | 1.2 |
| M.S. Degree, Full-Time | 26876 | 28060 | 4.4 | | | |
| Dr. Degree, Full-Time | 12359 | 12321 | -0.3 | | | |
| Grad., Full-Time | 39235 | 40381 | 2.9 | | | |
| Grad., Part-Time | 25065 | 24133 | -3.7 | | | |
| Total Grad. | 64300 | 62514 | -2.8 | | | |
| No. of Schools | 289 | 276 | --- | 135 | 133 | --- |
| **NEW JERSEY COLLEGES** | | | | | | |
| Freshmen, Full-Time | 1947 | 2213 | 13.7 | 681 | 748 | 9.8 |
| Undergrad, Full-Time | 6346 | 6538 | 3.8 | 1642 | 1700 | 3.5 |
| Undergrad, Part-Time | 738 | 892 | 20.9 | 965 | 653 | -32.3 |
| Total, Undergrad. | 7084 | 7480 | 5.6 | 2607 | 2353 | -9.7 |
| M.S. Degree, Full-Time | 375 | 329 | -12.3 | | | |
| Dr. Degree, Full-Time | 255 | 280 | 9.8 | | | |
| Engrg Deg. Full-Time | 8 | 11 | --- | | | |
| Grad., Full-Time | 638 | 620 | -2.8 | | | |
| Grad., Part-Time | 1586 | 1379 | -13.1 | | | |
| Total, Grad. | 2224 | 1999 | -10.1 | | | |
| No. of Schools | 6 | 6 | --- | 8 | 9 | --- |
| **NJIT (Engrg and Technology Only)** | | | | | | |
| Freshmen, Full-Time | 648 | 688 | 6.2 | | | |
| Undergrad, Full-Time | 2158# | 2004 | 2.4 | 164# | 187 | 9.2 |
| Undergrad, Part-Time | 528# | 643 | | 271# | 288 | |
| Total, Undergrad. | 2586 | 2647 | 2.4 | 435 | 475 | 9.2 |
| M.S. Degree, Full-Time | 85 | 65 | -23.5 | | | |
| Dr. Degree, Full-Time | 16 | 16 | 0.0 | | | |
| Grad., Full-Time | 101 | 81 | -19.8 | | | |
| Grad., Part-Time | 583 | 528 | -9.4 | | | |
| Total, Grad. | 684 | 609 | -11.0 | | | |
| EMPLOYMENT PROJECTIONS, N.J. INDUSTRY (Engrg and Technology) | | | | | | |
| | 1974 | 1985 | ** | 1974 | 1985 | ** |
| Statewide | 52600 | 63000 | 19.8 | 43800 | 58300 | 33.1 |
| Seven-County Region* | 30000 | 34850 | 16.2 | 22700 | 28200 | 24.2 |
| HIGH-SCHOOL GRAD. CLASSES, N.J. Public Schools | | | | | | |
| | JUNE 1977 | JUNE 1978 | | | | |
| TOTAL N.J. | 98530 | 98001 | -0.5 | | | |
| Seven-County Region* | 55953 | 55229 | -1.3 | | | |

*Seven Metropolitan Counties: Essex, Bergen, Union, Passaic, Hudson, Morris, Middlesex

**Assuming linear change over 10-yr. period, divide percentages below by 10 to make them comparable to percentages above

#Figures for day and evening students rather than full-time and part-time.

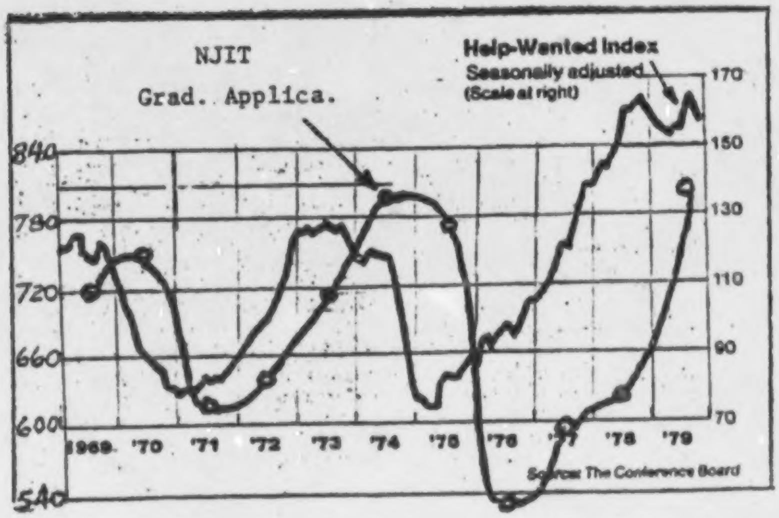
## U.S. EMPLOYMENT BY OCCUPATION, ACTUAL 1974, AND PROJECTED FOR 1985

(In Thousands)

| OCCUPATION | EMPLOYMENT | | PERCENT CHANGE |
|---|---|---|---|
| | 1974 | 1985 | 1974-85 |
| All Occupations, Total | 85,936 | 103,355 | 20 |
| Engineering, Technical, Total | 1,168 | 1,460 | 25 |
| Chemical | 50 | 62 | 24 |
| Civil | 167 | 225 | 35 |
| Electrical | 287 | 374 | 30 |
| Industrial | 193 | 224 | 16 |
| Mechanical | 183 | 234 | 28 |
| Life and Physical Scientists, Total | 229 | 282 | 23 |
| Chemists | 121 | 145 | 20 |
| Physicists and Astronomers | 22 | 29 | 29 |
| Mathematical Specialists | 43 | 59 | 39 |
| Engineering and Scientific Workers | 915 | 1,277 | 40 |
| Computer Specialists | 308 | 476 | 55 |
| Computer Systems Analysts | 97 | 160 | 65 |
| Architects | 78 | 110 | 40 |
| Personnel and Labor Relations Workers | 325 | 450 | 38 |
| Bank Officers and Financial Managers | 478 | 705 | 47 |
| Health Administrators | 150 | 250 | 67 |

Source: Bureau of Labor Statistics, U.S. Department of Labor, November, 1976.

## SUPERPOSITION OF TOTAL ANNUAL GRADUATE DIVISION APPLICATIONS ON GRAPH OF HELP-WANTED INDEX*



*Source: New York Times, Sunday January 6, 1980.

The total of first-semester plus second-semester Graduate Division applications (plotted in the middle of the calendar year) indicates a pronounced correlation with job openings, as indicated by the want-advertising activity. A lag of a year to two years is seen in the applications graph.

## D.H.E. UNDERGRADUATE ENROLLMENT PROJECTIONS*

TABLE 1. Projected Full-Time and Part-Time Undergraduate Enrollments for NJIT

| | Full-Time Undergraduates | | Part-Time Undergraduates | |
|---|---|---|---|---|
| Academic Year | Projection | Goals | Projection | Goals |
| 1978-79 (Actual) | 2,900 | 2,900 | 1,800 | 1,800 |
| 1985-86 | 3,000 | 3,400 | 1,600 | 1,600 |
| 1990-91 | 2,700 | 3,200 | 1,700 | 1,700 |
| Percent Change 1978 to 1990 | -7% | +12% | -6% | -6% |

TABLE 2. Projected Total Undergraduate Enrollments for NJIT

| | FTE | | Headcount | |
|---|---|---|---|---|
| Academic Year | Projection | Goal | Projection | Goal |
| 1978-79 (Actual) | 3,500 | 3,500 | 4,700 | 4,700 |
| 1985-86 | 3,600 | 4,000 | 4,600 | 5,000 |
| 1990-91 | 3,300 | 3,800 | 4,400 | 4,900 |
| Percent Change 1978 to 1990 | -7% | +10% | -7% | +4% |

---

*Source: "The 1980 Statewide Plan for Higher Education - First Draft", State of N. J. Department of Higher Education, December 1979.

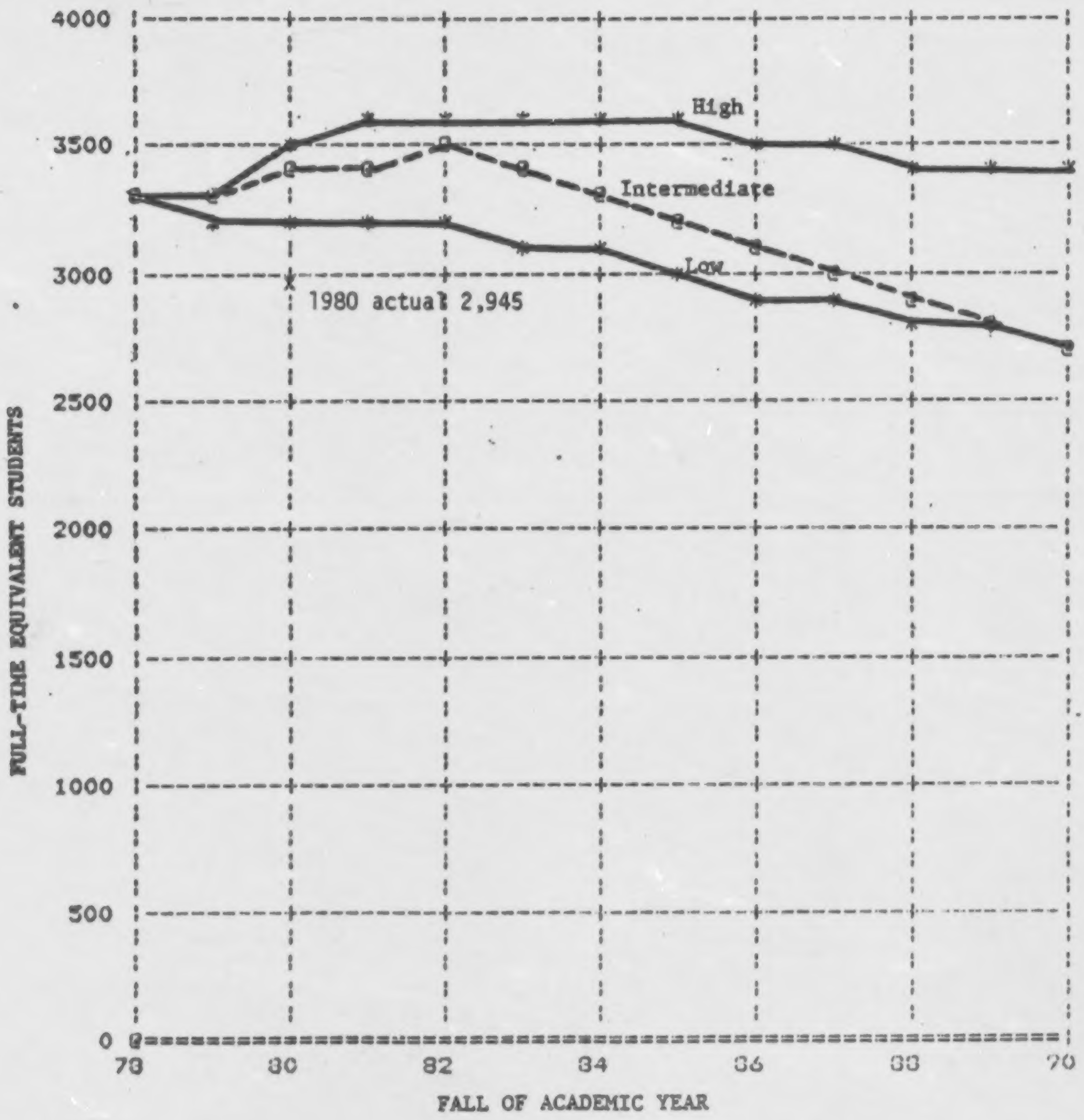
## DHE ENROLLMENT PROJECTIONS FOR FULL-TIME UNDERGRADUATE FTE

DHE Projections for NJIT as a High Drawing Power Institution

| Academic Year | ENROLLMENTS | INTERMEDIATE ENROLLMENTS | HIGH ENROLLMENTS |
|---|---|---|---|
| 1975 | 2925 | 2925 | 2925 |
| 1976 | 3102 | 3102 | 3102 |
| 1977 | 3291 | 3289 | 3102 |
| 1978 | 3268 | 3294 | 3308 |
| 1979 | 3244 | 3320 | 3350 |
| 1980 | 3200 | 3367 | 3457 |
| 1981 | 3181 | 3429 | 3561 |
| 1982 | 3163 | 3453 | 3612 |
| 1983 | 3124 | 3415 | 3611 |
| 1984 | 3085 | 3335 | 3571 |
| 1985 | 3019 | 3240 | 3570 |
| 1986 | 2936 | 3089 | 3513 |
| 1987 | 2868 | 2979 | 3476 |
| 1988 | 2823 | 2900 | 3443 |
| 1989 | 2782 | 2802 | 3388 |
| 1990 | 2723 | 2696 | 3381 |
| 1991 | 2646 | 2530 | 3303 |
| 1992 | 2567 | 2361 | 3225 |
| 1993 | 2514 | 2249 | 3169 |
| 1994 | 2487 | 2184 | 3133 |
| 1995 | 2482 | 2168 | 3126 |

Source: Communication from Ayse Ergin, Feb. 13, 1979.

DHE ENROLLMENT PROJECTIONS FOR FULL-TIME UNDERGRADUATE FTE
DHE PROJECTIONS FOR NJIT AS A "HIGH-DRAW" INSTITUTION



Appendix F

# ENROLLMENT PROJECTIONS BY MATHEMATICAL MODEL

Source of Data:

Department of Planning
and Institutional
Research

# APPENDIX F

## ENROLLMENT PROJECTIONS BY MATHEMATICAL MODEL

This Appendix outlines the methods used in the computer computation of NJIT enrollment projections as discussed in Chapter III. A complete computer example for one set of parameters is included.

The model is developed specifically for NJIT, i.e., a technological university drawing most of its students from the 7-county metropolitan region for which employment projections as well as public high school graduating class statistics are available.

Since virtually all students* are following degree paths, the "cohort survival" method is used for all full-time students, starting with freshman applications and proceding through admissions to first-time full-time freshman enrollment. At this point a separate model continues through each undergraduate semester to graduation. Part-time students are computed on the basis of the ratio of part-time to full-time students in each group. A simplified flowchart for each module is shown on the following two pages.

Freshmen and sophomores are not broken out into separate disciplines, but at the beginning of the junior year a distribution factor divides full-time continuing students among Engineering, Engineering Technology, Architecture and "Other" (principally Industrial Administration and Computer Science). Non-matriculated and Division of Technology Certificate Program students are treated as separate groups of part-time students.

The various continuation ratios in the model can be projected by any combination of three methods: (1) historical ( 2- to 5-year) weighted-average values maintained constant over the years of the projection, (2) a mathematical algorithm governing the behavior of the ratio over a stated span of years, or (3) individual annual values supplied as input data. Numbers of new transfer full- and part-time students are added to the system at every point, but principally at the beginning of the junior year.

### First-Time Full-Time Freshmen

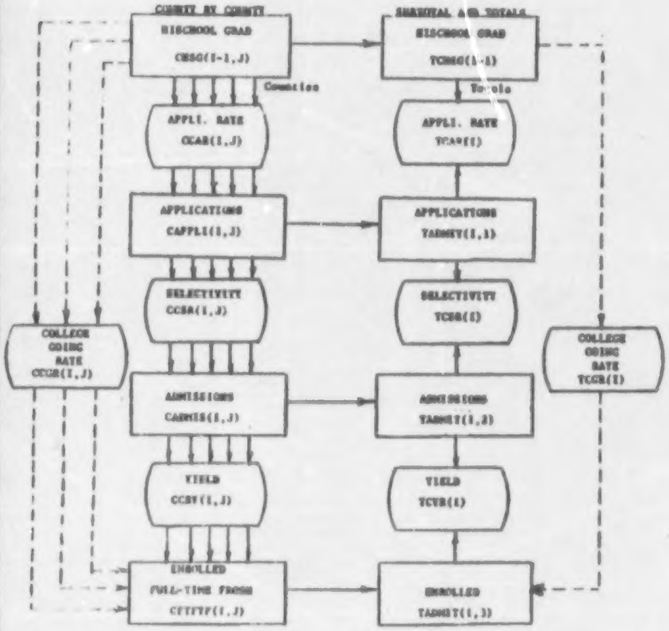
In the flowchart of the module which computes projections for first-time full-time freshmen, overall total values and subtotals for the NJIT 7-county area are shown separated from county-by-county computations. Boxes with only outgoing arrows represent input data, those with only incoming arrows represent computed results, and boxes with both incoming and outgoing paths represent projected data used in further processing. The flow-chart represents the progression for freshmen of year I and county J, coming from the high-school class of year I-1. Thus the flow chart defines the transition

---

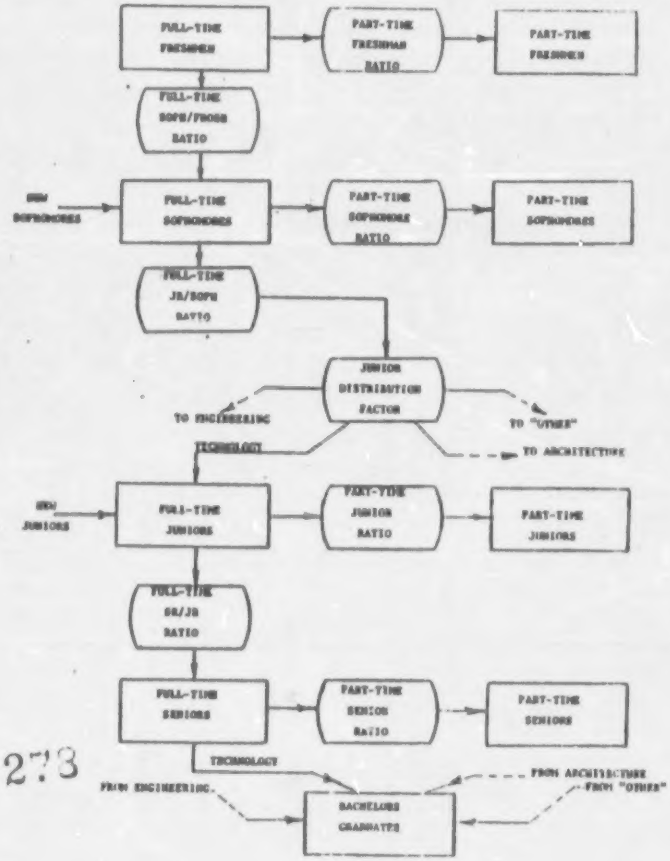
*With the exception of those in the Division of Continuing Education, who are not included in the computer programs.

# FLOWCHARTS FOR NJIT ENROLLMENT PROJECTION COMPUTER PROGRAMS

FLOW-CHART FOR FIRST-TIME FULL-TIME FRESHMEN
where I = Year J = County


COUNTY BY COUNTY
HISCHOOL GRAD
CHSG(I-1,J)
Counties
APPLI. RATE
CCAR(I,J)
APPLICATIONS
CAPPLI(I,J)
SELECTIVITY
CCSR(I,J)
COLLEGE
GOING
RATE
CCGR(I,J)
ADMISSIONS
CADMIS(I,J)
YIELD
CCSY(I,J)
ENROLLED
FULL-TIME FROSH
CFTFTF(I,J)
SUBTOTAL AND TOTALS
HISCHOOL GRAD
TCHSG(I-1)
Totals
APPLI. RATE
TCAR(I)
APPLICATIONS
TADMIT(I,1)
SELECTIVITY
TCSR(I)
ADMISSIONS
TADMIT(I,2)
YIELD
TCYR(I)
ENROLLED
TADMIT(I,3)
COLLEGE
GOING
RATE
TCGR(I)

FLOW-CHART FOR UNDERGRADUATE STUDENTS


FULL-TIME
FRESHMEN
PART-TIME
FRESHMAN
RATIO
PART-TIME
FRESHMEN
FULL-TIME
SOPH/FROSH
RATIO
NEW
SOPHOMORES
FULL-TIME
SOPHOMORES
PART-TIME
SOPHOMORE
RATIO
PART-TIME
SOPHOMORES
FULL-TIME
JR/SOPH
RATIO
JUNIOR
DISTRIBUTION
FACTOR
TO ENGINEERING
TECHNOLOGY
TO "OTHER"
TO ARCHITECTURE
NEW
JUNIORS
FULL-TIME
JUNIORS
PART-TIME
JUNIOR
RATIO
PART-TIME
JUNIORS
FULL-TIME
SR/JR
RATIO
FULL-TIME
SENIORS
PART-TIME
SENIOR
RATIO
PART-TIME
SENIORS
TECHNOLOGY
FROM ENGINEERING
FROM ARCHITECTURE
FROM "OTHER"
BACHELORS
GRADUATES

ratio immediately to the right of the "=" signs:

Applications = (Applications Rate) x (High School Graduates)

Admissions = (Selectivity) x (Applications)

Enrollees = (Yield) x (Admissions)

Foreign and out-of-state students are treated as if they came from two fictitious counties, each having a basic arbitrary pool of 1000 "high school graduates". The extreme left- and right-hand paths of the figure are used for these groups and for defining the overall transfer function:

College-Going-Rate = (Applications Rate) x (Selectivity) x (Yield)

The right-hand solid-line path is used to compute overall or average transfer ratios, independent of county, for application rate, selectivity, and yield. Subtotals for the NJIT 7-county region are also used (not shown in the figure) to compute ratios for these counties as a group. Some additional programming (also not shown) permits independent parameters to be used for approximating the growth in numbers of E.O.P. students.

With this model the following studies can be made:

1. Enhancement of college-application rate due to increased demand, including:

   (a) Increasing job opportunities in a high-technology society
   (b) Increase in applicants due to availability of housing
   (c) Increasing participation in technological training by women
   (d) Increasing participation by ethnic minorities and the disadvantaged
   (e) Increasing propensity of high-school graduates to go to N.J. colleges
   (f) Increasing effect of marketing efforts by NJIT.

   The parameters JOBS1 and JOBS2 are used to separately represent demand increases in the 7-county proximate region and beyond, respectively, Demand determines the college application rate, thus:

   (College Application Rate) = (Average* College Application Rate)

   x(1 + (Year - IYR3) x JOBS/1000)

   where IYR3 is the first year of projection.

   In the example reproduced in this appendix, values used are:

   JOBS1 = 15, JOBS2 = 25

   The result, in Essex County, for example, in an increase in the college application rate from 3.805% to 5.156% by 1990.

2. Increase in E.O.P. program students

   E.O.P. students occupy a separate "county" in the program whose college-going rate is computed by the algorithm

   (EOP College-Going Rate) = (Average EOP College-Going Rate)

   x (1 + (Year-IYR3) x IEOP/100)

   where IEOP is the annual percentage increase from IYR3 to 1990. In the example, IEOP = 4, which results in approximately 3 additional students each year to 1990.

---

*Weighted average over past years IYR1 to IYR2. Projection time span is IYR3 = IYR2 + 1 to IYR4 = 1995.

3. Increase in out-of-state U.S. and foreign visa students

Each of these categories of students also originates from a fictitious "county". Together they are meant to represent all students from outside the 7-county proximate area attracted to NJIT by housing availability. The out-of-state U.S."county" has a constant high-school graduating cohort CHSG=1000, which has a college-going rate

$$CCGR = ROSPB/CHSG$$

where CHSG=1000 and in the first year of projection ROSPB is assigned a base value OSPB. Each year to 1993 ROSPB is replaced by a new value

$$ROSPB^{1.0 + OSPY/1000}$$

to yield an exponential growth. In the example

$OSPB = 10, \qquad OSPY = 50.$

The result is an exponential growth from 11 students in 1980 to 22 in 1985, 51 in 1990 and 95 in 1993.

The other component of freshman growth due to housing availability, foreign visa students, originates from a fictitious "county" whose arbitrary high-school graduate cohort is 1000 in 1979 and increases by 600 each year until it reaches 8800 in 1993. This purely arbitrary set of values is then the "county" high-school graduating cohort, CHSG, used to compute the college-going rate

$$CCGR = ACCGR \times (1000 + FSPY \times (Year - IYR3) \times 10)/CHSG$$

where

ACCGR is the historical weighted-average college-going rate, which has resulted in 11 foreign visa freshmen

FSPY is a parameter assigned, which determines growth

In the example, FSPY = 60, which results in a linear increase of 3 students per year until 40 is reached in 1993. The overall results of parameters FSPY, OSPB, and OSPY are a linear plus an exponential increase in freshmen to be housed that reaches 68 students in 1990.

4. Enhancement of college-application rates due to new programs.

The college application rate for each N.J. county is assumed to increase each year due to the occasional but continual introduction of new academic programs. The algorithm implemented is a multiplying factor

$$1 + (NEWP/1000)^{YEAR-IYR3+1}$$

where NEWP is the new-program growth factor.

In the example, NEWP = 12. The result is a considerable increase in college application rates from their historical weighted-average values. In Essex County, for example, the rate increases from 3.805% to 5.156% in 1990. Of this increase, 1.5% per year is due to the factors of item 1 and the remainder is due to new programs. Hence over 11 years the increase due to new programs alone would be from 3.805% to 4.53%

5. Effects of changes in selectivity and yield ratios,

Data over the past few years indicate that the relationship of (Selectivity) x (Yield) to Selectivity is approximately a linear one for small changes:

$$(\text{Selectivity}) \times (\text{Yield}) = m \times (\text{Selectivity}) + k$$

or

$$SY = mS + k$$

with constant slope $m = 2/3$. (The parameter k, we need not know.)

If this is so, then for small changes in selectivity, S will be proportional to the change in the product, SY,

or

$$\Delta S = \frac{1}{m} \Delta(SY)$$

This equation implies that for a small increase in selectivity resulting from a change in admissions policy, two-thirds of the additional admitted students will enroll.

The program provides three options, involving parameters DSLC and DYLD. If both are set to zero, historical weighted-average values of selectivity and yield are held constant over the years of the projection. If DSLC is assigned a non-zero value, the percentage change in selectivity will be -DSLC/5 applied each year for five years, starting with the first year of the projection. The yield will then be calculated as proposed above.

In the example, DSLC and DYLD were set to zero, resulting in the use of historical weighted-average values for selectivity and yield ratios for each county.

A third option permits specification (rather than calculation) of the change in yield, DYLD, also occurring gradually over the next five years.

Given a selected "target" number of freshmen enrollees, the computer program figures back to obtain the number of additional admissions required. It then computes the overall changes in selectivity required and yield resulting, if the additional enrollees were to come from the New Jersey counties. (When previously computed enrollment exceeds the target, the additional enrollees are given as negative values and selectivity is reduced accordingly. When it is impossible to achieve the target from the available applicants, selectivity is set to 100 per cent and the greatest possible number of enrollees is computed. The results in such cases are not meaningful, however, because the algorithm used does not apply to large changes in selectivity.

In the example the target selected is TARG=650 FTFT freshmen enrollees.

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*Note that E.O.P. students are included

6. Study of NJIT as a "high-draw" institution.

The New Jersey Statewide Planning Task Force "Demand" Subcommittee (#1A) proposed an enrollment projection model* based solely on the supply of potential students rather than demand for higher education. In this model, higher education institutions are subdivided into three classes: "uniform drawing power", "intermediate drawing power" and "high drawing power". NJIT was classified as a high drawing power institution. "High-draw factors", D and Y, are applied to implement the idea that the institution will maintain its historical enrollment from a given county until the CHSG has dropped to D per cent of its current value, and thereafter will drop at Y per cent of the drop in CHSG. Both D and Y are set to the desired values. (The default D = Y = 0 is equivalent to setting D = Y = 100, and the procedure is not employed.)

There seemed to be no logic available for selecting suitable numerical values for D and Y, so the model was not used in the examples.

The computer printout which follows is for the medium demand case with all enrollment goals fully achieved and with selectivity reduced five per cent.

Page 1. The input parameters are listed

Page 2. The college application rate for first-time full-time freshmen, in per cent, by county, in order of number of enrollees. Warren and Sussex are combined as "Northwest" and the other unlisted New Jersey counties as "Southern". Headings indicate academic years of given data by "####" and years of computed projections by "@@@@".

Page 3. The number of New Jersey applicants, by county (including EOP).

Page 4. The selectivity ratios. Values for counties with only 10 to 20 applicants are significant to only ± 5 to 10 per cent. Values are high for urban counties because EOP students are included

Page 5. The number of New Jersey students admitted (accepted), by county.

Page 6. The yield ratios. As for selectivity, values are meaningless for counties with small numbers of enrollees.

Page 7. The NJIT college-going rate, by county. This page includes college-going rates for fictitious "counties" representing distant New Jersey/out-of-state students, foreign visa students, and EOP students. For each of these three "counties" an arbitrary pool of 1000 available "graduates" is assumed. (Selectivity and yield are not calculated). This fiction allows remaining computations to proceed in the same fashion for these groups as for the others.

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*"Full-Time Undergraduate Enrollment Projections, 1977-1995, Technical Report", May 1979. Also, "Summary Report - Undergraduate and Graduate Enrollment Projections", June 1979.

Page 8. Enrollment headcounts of first-time full-time freshmen with subtotals for N.J. freshmen (without additional E.O.P. students, and including additional E.O.P. students.)

Page 9. Summary sheet giving state-wide application, selectivity, and yield ratios, as well as overall college-going rate and a recapitulation of total applicants, admissions, and FTFT freshmen enrolled.

Page 10. Computation of the state-wide selectivity and yield that would be required to obtain a given "target" number of freshmen from the number of applicants used in the earlier portions of the program.

```
                        NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3                DATE: 5-15-80    PAGE A
ENROLLMENT PROJECTIONS, RUN [illegible]   NJR=4,2,6,10,11ICR=10,1[illegible],10,20.      05/15/80
RUN PARAMETERS:        IYR1 IYR2 IYR3 IYR4 ODS1 ODS2 JYR1 JYR2 KYR1 KYR2
                          4    9   16   25    6    2    7   25    1   19
COUNTY HIGH SCHOOL GRADUATES, GIVEN DATA FOR YEARS 1976 TO 1994

FALL     1976  1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994
SPRG     1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995

ESSEX
         [illegible] [illegible] [illegible] 9?08 9250 9329 8879 8634 8077 7723 7750 7586 7260 6536 5958 5894 5642 5495 5546

BERGEN
         13114 12?35 12?98 12079 11707 11613 10956 10236 9709 9595 9637 9026 8053 7170 6437 6751 6668 6605 6695

UNION
         [illegible] [illegible] 7116 6679 6479 6205 6069 5706 5265 5092 5202 5108 4771 4221 3707 3735 3748 3703 3793

PASSAIC
         5?31  5171  5155  5037  5102  4933  4941  4670  4512  4242  4203  4327  4066  3667  3429  3324  3281  3157  3309

HUDSON
         [illegible] 5313 [illegible] 5?02 5051 5046 4722 4753 4483 4243 4200 4247 4?71 3822 3524 3506 3310 3222 3286

MORRIS
         6577  6485  6740  6687  6447  6523  6306  6071  5718  5570  5562  5663  5187  4542  4077  4041  3872  3826  4117

MIDDLESX
         8671  87?6  8?82  8331  8315  8432  7848  7534  7054  6659  6645  6551  6?65  5400  4738  4076  4611  4557  4654

MONMOUTH
         7?22  71?2  7?48  7144  7144  7217  6867  6273  6019  5692  5781  5793  5356  4638  4151  4497  4189  4201  4287

SOMERSET
         [illegible] [illegible] ?473 3475 3403 3423 3129 2893 2731 2560 2647 2532 2424 2144 1878 1784 1864 1960 1959

OCEAN
         3177 [illegible] 3766 3974 4187 4042 4132 3941 3859 38?2 4155 4347 4463 4080 3955 4701 4709 4673 5127

MERCER
         [illegible] [illegible] [illegible] 3328 3368 ?353 3202 3158 3077 2980 2991 3?59 2920 2555 2377 2359 2336 2249 2369

NRTHEST
         27??  2??3  27?3  2879  2894  3050  2910  2836  2793  2734  2991  2566  2964  2741  2539  2085  2962  3045  3252

SOUTHERN
         [illegible] [illegible] [illegible] 21917 21441 2156? 20655 19408 1913? 18??6 18488 17585 19?4? 16717 15439 16120 15941 15057 16604

*SUBTOT*
         [illegible] [illegible] [illegible] 95617 94710 91666 92624 85195 8242? 79??6 79652 [illegible] 76662 68433 62209 64666 62933 62550 64991

FOREIGN
         1 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 6400 7000 7500 8200 8800 8800 8800

OUTSTATE
         1 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 1000 1000 1000 1000 1000 1000

E.O.F.
         [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 1000 1000 1000 1000 1000 1000
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                        NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                         DATE: 5-15-80    PAGE 8

TOTAL NJ APPLICATIONS, ADMISSIONS, AND FIRST-TIME FULL-TIME FRESHMAN ENROLEES FOR YEARS OF GIVEN DATA

FALL   1977  1978  1979

TOTAL N.J. HSGC (FOR PRECEDING YEAR)

       97399 97843 98156

APPLIED
        1655  1628  1829

ADMITTED
        1132  1144  1139

ENROLLED
         630   665   649


NEW JERSEY FRESHMAN APPLICATIONS, SELECTIVITY, YIELD, AND ADJUSTMENT RATIOS

FALL   1977  1978  1979

APPLICATION RATIOS (PER CENT)
  WGT. AVG:   1.774
        1.70  1.69  1.86

SELECTIVITY RATIOS (PER CENT)
  WGT. AVG:  65.961
       68.40 70.27 62.27

YIELD RATIOS (PER CENT)
  WGT. AVG:  57.142
       55.65 58.13 56.98

OVERALL COLLEGE-GOING RATE (PER CENT)
  WGT. AVG:   .667
         .65   .79   .66

FRESHMAN ADJUSTMENT FACTOR  (SHOULD APPROXIMATE 1.0)

        1.[illegible] 1.[illegible] 1.[illegible]
```

```
ENROLLMENT PROJECTIONS, RUN SEP:    KJR=4,2,6,10,11 ICR=10,10,10,20.      5/15/80
CASE 13X: OSPY=50,OSPB=10,DEY=00; FSPY=60,IEOP=4; DSLC=00; JOBS=15,25; NEWP=12


     AVG WEIGHTING:    3    2    1    0    0

     PARAMS:  FSPY,OSPB, D, Y:    50   10  100  100

              CALCP,FSPY,IEOP,JOBS1,JOBS2,DSLC,DYLD,NEWP,TARG:
               [illegible]  6     4   15    25    0    0   12   65
```

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                         NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3                    DATE: 5-15-80    PAGE 2
   ENROLLMENT PROJECTIONS, RUN 56R:    NJR=4,2,6,10,1;ICR=10,10,10,20.      05/15/80
   CASE 4ZX: OSPY=50,LSPA=10,DY=00; FSPY=60,IEOP=41 DSLC=00; JOBS=15,25; NEWP=12

   TRANSITION RATIO, FULL-TIME COUNTY COLLEGE APPLICATION RATE, PER CENT

   FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
   SPRG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
          ####  ####  ####  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****

   ESSEX      WGT. AVG:    3.881
         3.918 3.978 3.805 3.987 4.094 4.204 4.315 4.429 4.544 4.662 4.782 4.905 5.029 5.156 5.285 5.416 5.550 5.684 5.825

   BERGEN     WGT. AVG:    2.410
         2.158 1.917 2.623 2.373 2.437 2.502 2.569 2.636 2.705 2.775 2.847 2.919 2.994 3.069 3.146 3.224 3.304 3.385 3.467

   UNION      WGT. AVG:    2.636
         2.313 2.789 2.642 2.708 2.781 2.855 2.931 3.008 3.087 3.167 3.248 3.331 3.416 3.502 3.589 3.679 3.770 3.862 3.956

   PASSAIC    WGT. AVG:    3.684
         3.677 3.713 3.666 3.784 3.886 3.990 4.095 4.203 4.313 4.425 4.539 4.655 4.773 4.893 5.016 5.140 5.267 5.396 5.528

   HUDSON     WGT. AVG:    4.116
         4.125 3.650 4.425 4.226 4.342 4.458 4.577 4.697 4.820 4.945 5.072 5.202 5.334 5.468 5.605 5.744 5.886 6.031 6.178

   MORRIS     WGT. AVG:    2.064
         1.825 1.897 2.255 2.120 2.177 2.235 2.295 2.355 2.417 2.479 2.543 2.608 2.674 2.742 2.810 2.880 2.951 3.024 3.097

   MIDDLSX    WGT. AVG:    1.674
         1.611 1.505 1.808 1.720 1.766 1.813 1.861 1.910 1.960 2.011 2.063 2.116 2.169 2.224 2.280 2.336 2.394 2.453 2.513

   MONMOUTH   WGT. AVG:    0.883
         0.981 0.854 0.870 0.916 0.950 0.984 1.019 1.055 1.091 1.128 1.166 1.205 1.244 1.284 1.325 1.367 1.409 1.453 1.497

   SOMERSET   WGT. AVG:    1.291
         1.[illegible] 1.336 1.525 1.339 1.388 1.438 1.489 1.541 1.594 1.648 1.704 1.760 1.818 1.876 1.936 1.997 2.059 2.122 2.187

   OCEAN      WGT. AVG:    0.472
         0.365 0.307 0.612 0.490 0.508 0.526 0.545 0.564 0.583 0.603 0.623 0.644 0.665 0.687 0.708 0.731 0.753 0.777 0.800

   MERCER     WGT. AVG:    0.362
         0.316 0.267 0.44[illegible] 0.376 0.389 0.404 0.418 0.432 0.447 0.463 0.478 0.494 0.510 0.526 0.543 0.560 0.578 0.596 0.614

   NRTHWST    WGT. AVG:    0.524
         0.442 0.[illegible] 0.513 0.513 0.563 0.583 0.604 0.625 0.647 0.669 0.691 0.714 0.737 0.761 0.785 0.810 0.835 0.861 0.887

   SOUTHERN   WGT. AVG:    0.182
         0.106 0.175 0.212 0.129 0.196 0.203 0.210 0.218 0.225 0.233 0.241 0.249 0.257 0.265 0.273 0.282 0.291 0.300 0.309
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                                NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                                      DATE: 5-15-80    PAGE 3
ENROLLMENT PROJECTIONS, RUN 56R:    NJR=4,2,6,10,11ICR=10,1[illegible],10,20.     (5/15/80
CASE M3X: OSPY=50,OSPS=1 ,DAY=[illegible]01 FSPY=60,IEOP=4: DSLC=0J: JOBS=15,25: NEWP=12

NEW JERSEY FIRST-TIME FULL-TIME APPLICATIONS. (COMPUTED DATA FOR YEARS 1980 TO 1995)

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
       ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****

ESSEX
        378   375   356   362   379   392   383   382   367   360   371   372   365   337   315   319   313   312   323

BERGEN
        283   247   341   287   285   291   281   270   263   252   257   264   241   220   202   218   220   224   232

UNION
        162   194   186   181   180   177   178   172   163   161   169   170   163   148   133   137   141   143   150

PASSAIC
        176   192   187   191   198   197   202   196   195   188   191   201   194   179   172   171   173   170   183

HUDSON
        207   195   225   212   219   225   216   223   216   210   213   221   217   209   198   201   195   194   203

MORRIS
        128   123   152   142   140   146   145   143   138   138   141   148   139   125   115   116   114   116   127

MIDDLSX
        141   131   157   143   147   153   146   144   138   134   137   139   132   120   108   114   110   112   117

MONMOUTH
         73    61    63    63    68    71    70    66    66    64    67    70    67    60    55    61    59    61    64

SOMERSET
         40    34    56    46    47    49    47    45    44    42    45    45    44    40    36    40    38    42    43

OCEAN
         13    11    23    19    21    21    23    22    23    23    26    28    30    28    28    34    35    36    41

MERCER
         11     9    15    12    13    14    13    14    14    14    14    13    15    13    13    13    13    13    15

NRTHWST
         12    14    15    14    16    16    18    18    19    18    21    21    22    21    20    23    24    26    29

SOUTHERN
         23    38    47    41    42    44    43    42    43    43    44    49    49    45    42    45    46    48    51

*TOTAL*
  [illegible] [illegible] [illegible] 1712 1758 1798 1765 1737 1688 1647 1696 1743 1678 1545 1437 1492 1481 1497 1578
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                         NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                                        DATE:  5-15-80    PAGE 4
ENROLLMENT PROJECTIONS, RUN 56[illegible]    NJR=4,2,6,10,1;ICR=10,10,15,20.      05/15/80
CASE M3X: OSPY=5[illegible],OSPR=1[illegible],DAY=30; FSPY=60,IEOP=4; DSLC=00; JOBS=15.25; NEWP=12

FIRST-TIME FULL-TIME SELECTIVITY. (COMPUTED DATA FOR YEARS 1980 TO 1995)

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
       ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****

ESSEX     WGT. AVG:  64.035
      66.14 [illegible] 62.29 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03 64.03

BERGEN    WGT. AVG:  68.311
      71.73 74.49 [illegible] 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31 68.31

UNION     WGT. AVG:  66.762
      71.60 [illegible] 62.23 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76 66.76

PASSAIC   WGT. AVG:  64.863
      62.24 [illegible] 63.49 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86 64.86

HUDSON    WGT. AVG:  57.564
      [illegible] [illegible] 52.44 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56 57.56

MORRIS    WGT. AVG:  71.624
      [illegible] 79.67 65.13 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62 71.62

MIDDLSX   WGT. AVG:  69.737
      74.29 75.57 64.33 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74 69.74

MONMOUTH  WGT. AVG:  70.375
      71.43 75.41 66.67 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37 70.37

SOMERSET  WGT. AVG:  75.407
      [illegible] 81.58 71.43 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41 75.41

OCEAN     WGT. AVG:  65.359
      69.23 63.64 65.22 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36 65.36

MERCER    WGT. AVG:  46.566
      [illegible] [illegible] 46.67 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57 46.57

NRTHRST   WGT. AVG:  69.643
      [illegible] 71.43 66.67 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64 69.64

SOUTHERN  WGT. AVG:  68.596
      [illegible] [illegible] [illegible] 68.6 68.60 68.60 68.60 68.60 68.60 68.60 68.60 68.60 68.60 68.60 68.60 68.60 68.60 68.60 68.60
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                                   NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                                         DATE: 5-15-80     PAGE 5
ENROLLMENT PROJECTIONS, RUN 568;    NJR=4,2,6,10,1; ICR=10,10,10,20.      05/15/80
CASE H3X; CSPY=60,OSPB=1 ,D=Y=00; FSPY=60,IEOP=4; DSLC=00; JOBS=15,25; NEWP=12

FIRST-TIME FULL-TIME ADMISSIONS. (COMPUTED DATA FOR YEARS 1980 TO 1995)

FALL    1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995
        #### #### #### @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@ @@@@

ESSEX
         250  240  223  232  243  251  245  245  235  231  238  238  234  216  202  204  200  200  207
BERGEN
         2 3  184  215  194  195  199  192  184  180  172  176  180  165  150  138  149  150  153  158
UNION
         116  128  117  121  120  118  119  115  109  107  113  113  109   99   89   91   94   95  100
PASSAIC
         122  131  122  124  128  126  131  127  126  122  124  130  126  116  112  111  112  110  119
HUDSON
         126  124  118  122  126  130  124  128  124  121  123  127  125  120  114  116  112  112  117
MORRIS
          79   98   99  102  100  105  104  102   99   99  101  106  100   90   82   83   82   83   91
MIDDLSX
         1 4   97  1 1  103  103  107  102  100   96   93   96   97   92   84   75   80   77   78   82
MONMOUTH
          50   46   42   46   48   50   49   46   46   45   47   49   47   42   39   43   42   41   45
SOMERSET
          30   31   40   35   35   37   35   34   33   32   34   34   33   30   27   30   29   32   32
OCEAN
           9    7   15   12   14   14   15   14   15   15   17   18   20   18   18   22   23   24   27
MERCER
           3    3    7    6    6    7    6    7    7    7    7    7    7    6    6    6    6    6    7
NRTHRST
           9   10   10   11   11   13   13   13   11   13   15   15   15   15   14   16   17   19   20
SOUTHERN
          15   27   32   25   29   30   29   29   29   29   30   34   34   31   29   31   32   33   35
*TOTAL*
        1172 1134 1132 1135 1150 1189 1164 1144 1112 1086 1121 1148 1107 1017  945  982  976  987 1040.
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                     NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                             DATE:  5-15-80    PAGE 6
ENROLLMENT PROJECTIONS, RUN 56[illegible]:   NJR=4,2,6,10,1; ICR=10,1[illegible],1[illegible],29.     [illegible]5/[illegible]5/80
CASE M3X; OSPY=[illegible],OSPD=1[illegible],D=Y=[illegible]0; FSPY=69,IEOP=4; DSLC=00; JOBS=15,25; NEWP=[illegible]2

FIRST-TIME FULL-TIME YIELD, (COMPUTED DATA FOR YEARS 1980 TO 1995)

FALL    1977  1978  1979  198-  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
        ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

ESSEX      WGT. AVG:  66.934
        61.[illegible] 69.11 6[illegible].26 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93 66.93

BERGEN     WGT. AVG:  58.603
        52.22 57.[illegible]1 61.40 58.6[illegible] 58.60 58.60 58.60 58.60 58.60 58.60 58.60 58.60 58.60 58.60 58.60 58.60 58.60 58.60 58.60

UNION      WGT. AVG:  58.157
        61.21 57.[illegible]7 57.26 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16 58.16

PASSAIC    WGT. AVG:  61.646
        6[illegible].66 63.36 6[illegible].83 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65 61.65

HUDSON     WGT. AVG:  61.424
        57.14 62.[illegible] 61.86 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42 61.42

MORRIS     WGT. AVG:  51.714
        57.78 48.[illegible] 51.32 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71 51.71

MIDDLSX    WGT. AVG:  43.510
        42.[illegible]1 48.48 4[illegible].59 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51 43.51

MONMOUTH   WGT. AVG:  46.487
        46.[illegible] 52.17 42.86 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49 46.49

SOMERSET   WGT. AVG:  47.307
        46.67 54.84 42.80 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31 47.31

OCEAN      WGT. AVG:  38.783
        55.56 29.57 4[illegible].[illegible] 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78 38.78

MERCER     WGT. AVG:  20.536
        37.5[illegible] [illegible] [illegible]6.57 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54 20.54

NRTHRST    WGT. AVG:  70.741
        44.44 [illegible] [illegible] 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74 70.74

SOUTHERN   WGT. AVG:  29.124
        53.[illegible] [illegible] [illegible] 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12 29.12
```

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29[illegible]

```
                          NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3

ENROLLMENT PROJECTIONS, RUN [illegible]:   JR=4,2,6,10,11 CR=10,10,10,20.     05/15/80
CASE H3X: GSPY=50,GSPB=10,D=Y=001 FSPY=60,IEOP=4; DSLC=001 JOBS=15.25; NEWP=12                DATE: 5-15-80    PAGE 7

OVERALL FULL-TIME COLLEGE GOING RATE, BY COUNTY     (EQUAL TO APPLICATION RATE X SELECTIVITY X YIELD)

FALL      1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
          ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

ESSEX      WGT. AVG:   1.664
          1.6[illegible] [illegible] 1.59 1.71  1.76  1.80  1.85  1.90  1.94  2.01  2.05  2.10  2.16  2.22  2.27  2.32  2.38  2.44  2.51

BERGEN     WGT. AVG:   0.917
          0.61  0.62  1.02  0.99  0.97  1.01  1.03  1.06  1.08  1.11  1.14  1.16  1.20  1.23  1.26  1.29  1.32  1.36  1.39

UNION      WGT. AVG:   1.123
          1.11  1.15  0.94  1.05  1.08  1.11  1.14  1.17  1.20  1.22  1.27  1.29  1.32  1.37  1.40  1.42  1.47  1.49  1.53

PASSAIC    WGT. AVG:   1.474
          1.39  1.61  1.42  1.51  1.55  1.60  1.64  1.67  1.73  1.77  1.81  1.85  1.92  1.96  2.01  2.04  2.10  2.15  2.21

HUDSON     WGT. AVG:   1.444
          1.43  1.46  1.44  1.49  1.52  1.59  1.61  1.66  1.70  1.74  1.81  1.84  1.89  1.94  1.99  2.03  2.08  2.14  2.19

MORRIS     WGT. AVG:   0.757
          0.79  0.74  0.76  0.79  0.81  0.83  0.86  0.87  0.89  0.92  0.93  0.97  1.00  1.03  1.03  1.06  1.08  1.12  1.14

MIDDLSX    WGT. AVG:   0.504
          0.51  0.55  0.47  0.53  0.54  0.56  0.56  0.58  0.60  0.60  0.63  0.64  0.66  0.69  0.70  0.72  0.74  0.73  0.77

MONMOUTH   WGT. AVG:   0.290
          0.22  0.34  0.25  0.29  0.31  0.32  0.33  0.33  0.35  0.37  0.38  0.40  0.41  0.43  0.43  0.44  0.48  0.48  0.49

SOMERSET   WGT. AVG:   0.450
          0.38  0.46  0.46  0.49  0.50  0.53  0.54  0.55  0.59  0.59  0.60  0.63  0.66  0.65  0.69  0.71  0.75  0.77  0.77

OCEAN      WGT. AVG:   0.123
          0.15  0.06  0.16  0.13  0.12  0.12  0.15  0.13  0.16  0.16  0.17  0.16  0.18  0.17  0.18  0.19  0.19  0.19  0.20

MERCER     WGT. AVG:   0.044
          0.09 [illegible] 0.06 0.03 0.03  0.03  0.03  0.03  0.03  0.03  0.03  0.03  0.03  0.04  0.04  0.04  0.04  0.04  0.04

NRTHWST    WGT. AVG:   0.257
          0.15  0.15  0.36  0.28  0.28  0.30  0.31  0.32  0.32  0.33  0.37  0.37  0.37  0.40  0.39  0.39  0.42  0.41  0.43

SOUTHERN   WGT. AVG:   0.034
          0.01  0.02  0.04  0.04  0.04  0.04  0.04  0.04  0.04  0.04  0.05  0.05  0.05  0.05  0.05  0.06  0.06  0.06  0.06

FOREIGN    WGT. AVG:   0.450
          0.3[illegible] 0.2[illegible] 0.50 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45

OUTSTATE   WGT. AVG:   [illegible].883
          [illegible] 1.3[illegible] 0.7[illegible] 1.12 1.27 1.44 1.64 1.89 2.19 2.55 3.06 3.56 4.25 5.13 6.25 7.60 9.55 10.00 10.00

E.O.P.     WGT. AVG:   7.750
          7.1[illegible] 8.[illegible] [illegible] 8.27 8.59 8.91 9.22 9.54 9.86 10.18 10.49 10.81 11.13 11.45 11.45 11.45 11.45 11.45 11.45
```

```
                                        NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                                                          DATE: 5-15-80     PAGE 8
ENROLLMENT PROJECTIONS, RUN 5&R:     NJR=4,2,6,10,1;ICR=10,10,10,20.        5/15/80
CASE 03X: DSPY=[illegible],DSPE=1[illegible],D=Y=00; FSPY=60,IEOP=4; DSLC=00; JOBS=15,25; NEWP=12

FIRST-TIME FULL-TIME FRESHMEN, (COMPUTED DATA FOR  YEARS 1980 TO 1995)

FALL   1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995
       #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### ####

ESSEX
        154  172  150  155  163  168  164  164  157  155  159  159  157  145  135  137  134  134  139
BERGEN
        [illegible] [illegible] 132  115  114  117  113  108  105  101  103  105   97   88   81   87   88   90   93
UNION
         71  [illegible]   67  [illegible]   70   69   69   67   64   62   66   66   63   58   52   53   55   55   58
PASSAIC
         74   53   73   76   70   79   81   78   78   75   76   80   78   72   69   68   [illegible]   68   73
HUDSON
         72   78   73   75   77   80   76   79   76   74   76   78   77   74   70   71   69   69   72
MORRIS
         52   43   51   53   52   54   54   53   51   51   52   55   52   47   42   43   42   43   47
MIDDLSX
         41   48   41   44   45   47   44   44   42   40   42   42   40   37   33   35   34   34   36
MONMOUTH
         23   24   15   21   22   23   23   21   21   21   22   23   22   20   18   20   20   20   21
SOMERSET
         14   17   17   17   17   18   17   16   16   15   15   16   16   14   13   14   14   15   15
OCEAN
          5    2    6    5    5    5    6    5    6    6    7    7    8    7    7    9    9    9   10
MERCER
          3  [illegible]    2    1    1    1    1    1    1    1    1    1    1    1    1    1    1    1    1
NRTHWST
          4    4   10    8    8    9    9    9    9    9   11   11   11   11   10   11   12   13   14
SOUTHERN
          8    5    9    8    8    9    8    8    8    8    9   10   10    9    8    9    9   10   10

TOTAL N. J. FIRST-TIME FULL-TIME FRESHMEN   (COMPUTED FOR YEARS 1980 TO 1995)
        630  665  649  643  661  679  665  653  633  618  640  653  632  583  539  558  556  561  589

E.O.P.
         71   9[illegible]   8[illegible]   8[illegible]   86   89   92   95   99  102  105  108  111  114  114  114  114  114  114
    NOTE: E.O.P. STUDENTS ARE INCLUDED IN COUNTY DATA, BUT GROWTH AFTER 1979 IS NOT.

TOTAL N. J. FIRST-TIME FULL-TIME FRESHMEN, INCLUDING GROWTH IN E.O.P. STUDENTS
        633  665  649  652  668  689  678  669  651  641  666  682  664  618  574  593  591  596  624

FOREIGN
        [illegible]    2    5  [illegible]    7   10   13   15   14   21   23   26   29   31   34   37   40   40   40
OUTSTATE
          6  [illegible]    7   11   13   14   16   19   22   26   30   34   43   51   62   77   95  100  100

TOTAL FIRST-TIME FULL-TIME FRESHMEN, INCLUDING OUT-OF-STATE AND FOREIGN STUDENTS
        644  [illegible]  661  667  688  715  707  703  693  688  719  744  736  700  670  707  726  736  764
```

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```
                              NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                                        DATE: 5-15-80    PAGE 9
   ENROLLMENT PROJECTIONS, RUN V6R:     NJR=4,2,6,10,1;ICR=10,10,10,20.      05/15/80
   CASE M3X: OSFY=5?,CSPB=1?,D=Y=00; FSPY=60,IEOP=4; DSLC=00; JOBS=15.25; NEWP=12

   SUMMARY SHEET, NEW JERSEY COUNTIES
   **********************************

   NEW JERSEY FRESHMAN APPLICATIONS, SELECTIVITY, AND YIELD RATIOS

   FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
          ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

   APPLICATION RATIOS (PER CENT)

          1.75  1.68  1.86  1.89  1.85  1.90  1.95  2.02  2.05  2.09  2.13  2.16  2.19  2.26  2.31  2.31  2.35  2.39  2.43

   SELECTIVITY RATIOS (PER CENT)

         68.40 70.27 62.27 66.13 65.78 66.13 65.95 65.86 65.88 65.94 66.10 65.86 65.97 65.83 65.76 65.82 65.90 65.93 65.91

   YIELD RATIOS (PER CENT)

         55.65 56.13 56.96 57.09 57.08 57.11 57.13 57.08 56.92 56.91 57.09 56.88 57.09 57.33 57.04 56.82 56.97 56.84 56.43


   NEW JERSEY FRESHMAN OVERALL COLLEGE COUNTY-GOING RATE (PER CENT)

   FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
          ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

         0.647 0.625 0.661 0.678 0.697 0.717 0.734 0.750 0.768 0.783 0.803 0.808 0.824 0.852 0.866 0.861 0.883 0.897 0.906


   NEW JERSEY APPLICATIONS, ADMISSIONS, AND FIRST-TIME FULL-TIME FRESHMAN ENROLLEES

   FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
          ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

   APPLIED
          1655  1529  1829  1717  1755  1798  1765  1737  1688  1647  1696  1743  1678  1545  1437  1492  1481  1497  1578

   ADMITTED
          1132  1144  1145  1135  1150  1184  1165  1144  1112  1086  1121  1140  1107  1017   945   982   976   987  1040

   ENROLLED
           630   645   649   646   661   679   665   653   631   618   640   653   632   583   539   558   556   561   589
```

```
                      NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL3
                                                                                DATE:  5-15-80     PAGE 10
ENROLLMENT PROJECTIONS, RUN 56R:    MJR=4,2,6,10,1;ICR=10,10,10,20.     05/15/80
CASE M3X: OSFY=50,OSPB=10,D=Y=00; FSPY=60,IEOP=4; DSLC=00; JORS=15,25; NEWP=12

VALUES OF NEW JERSEY SELECTIVITY, ADMISSIONS, AND YIELD REQUIRED TO OBTAIN 650 FIRST-TIME FULL-TIME FRESHMEN

FALL    1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
        ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

NEW JERSEY FIRST-TIME FULL-TIME APPLICATIONS. (COMPUTED DATA FOR YEARS 1980 TO 1995)

        1655  1620  1929  1717  1755  1798  1765  1737  1680  1647  1696  1743  1678  1545  1437  1492  1481  1497  1578

SELECTIVITY RATIOS (PER CENT)

       68.49 7 .27 62.27 64.64 62.78 60.91 61.15 61.33 62.10 62.52 60.04 57.82 58.33 61.02 63.73 60.14 58.25 57.36 55.12

ADDITIONAL ADMISSIONS

           3     0     0   -24   -56   -23   -81   -78   -63   -56  -102  -140  -128   -74   -29   -84  -113  -128  -170

ADMITTED
        1132  1144  1139  [illegible]  1102  1095  1079  1065  1048  1030  1018  1008   979   943   916   897   863   859   870

YIELD RATIOS (PER CENT)

       55.65 58.13 56.96 56.88 56.59 56.29 55.38 56.37 56.33 56.37 56.13 55.52 55.84 56.59 56.73 55.89 55.69 55.37 54.67

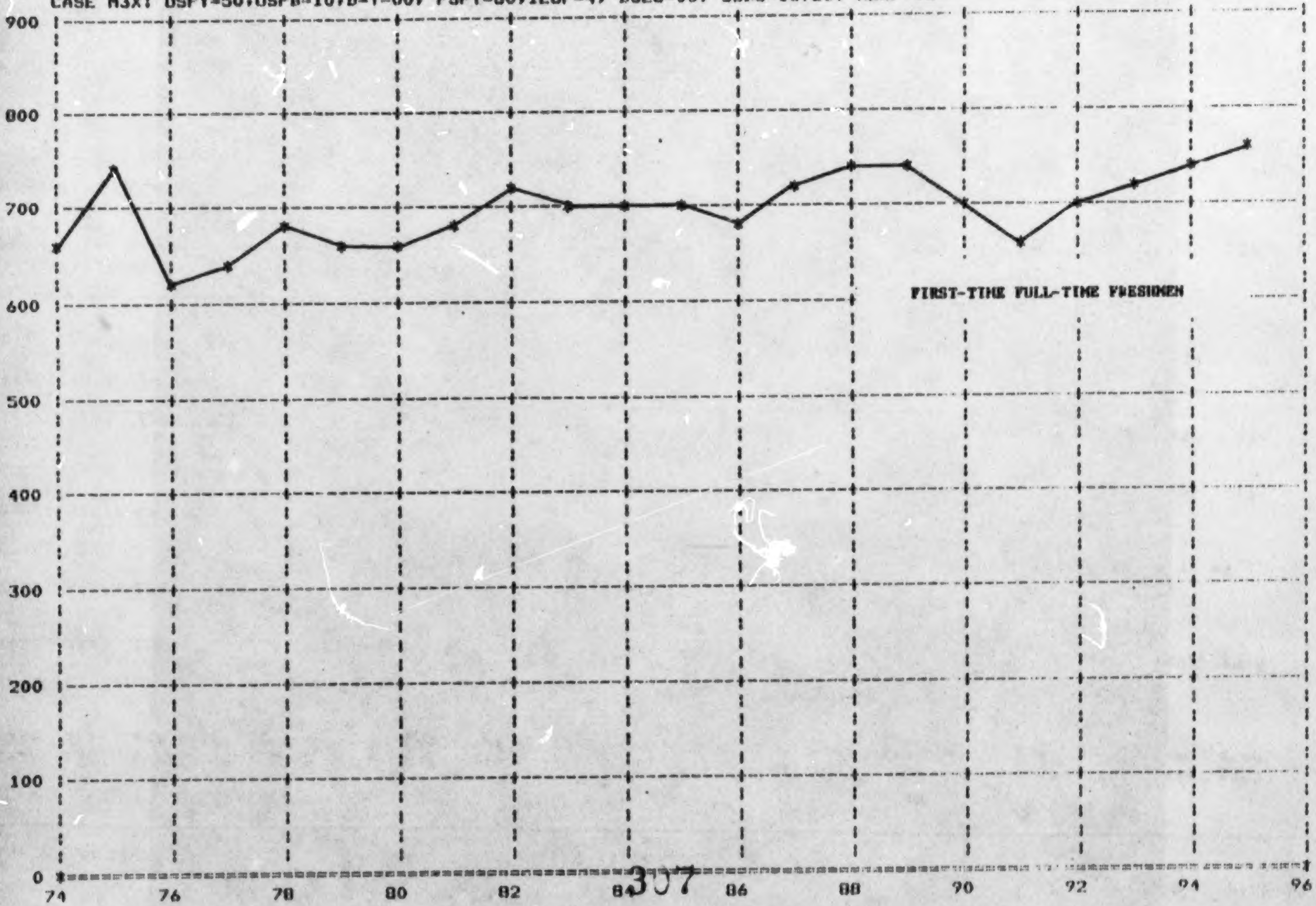

TOTAL N. J. FIRST-TIME FULL-TIME FRESHMEN   (COMPUTED FOR YEARS 1980 TO 1995)

         630   665   649   631   623   616   608   600   590   580   571   559   546   533   519   501   480   475   475

TOTAL FIRST-TIME FULL-TIME FRESHMEN, INCLUDING OUT-OF-STATE AND FOREIGN STUDENTS

         644   680   661   65[illegible]   650   650   650   650   650   650   650   650   650   650   650   650   650   650   650
```

```
ENROLLMENT PROJECTIONS, RUN 56R;    NJR=4,2,6,10,1;ICR=10,10,10,20.      05/15/80
CASE M3X; OSPY=50,OSPB=10,D=Y=00; FSPY=60,IEOP=4; DSLC=00; JOBS=15,25; NEWP=12
```



## Undergraduate Enrollments

The second module shown on the flowchart of page F-2 uses the number of FTFT freshmen computed in the preceding module. To these are added other full-time new freshmen computed from a "freshman adjustment factor," FAF, which in the example is projected as a constant value computed from the historical weighted-average ratio of total new full-time freshmen from the Registrar's files, to first-time full-time freshmen from the Admission Office records.

To these "new" freshmen are added continuing full-time freshmen. These are projected as proportional to the "new" Freshmen of the preceding year.

The full-time freshmen are moved through the curriculum, semester by semester, using "continuation ratios", each of which represents the ratio of full-time students in a given semester to the corresponding group of students in the preceding semester. Page 1 of the printout which follows is an example of this process for freshman and sophomore years. In this example, each continuation ratio is held constant at its historical weighted-average value.*

New full-time students (transfers) are added each semester. Again, in the example, the new students are maintained constant at historical weighted-average numbers. Most of these new students are nominal juniors who, lacking one or two pre-professional courses, are classified as sophomores.

At the end of the sophomore year, in addition to the continuation factor, a distribution factor matrix is computed and the students "fan out" into their respective disciplines: Engineering, Engineering Technology, Architecture, and "Other". This distribution factor matrix can be programmed to gradually shift the balance of full-time continuing students over the years of the projection.

The program currently provides for injecting an annually increasing number of full-time transfer Junior students into each of the four disciplines. The parameter to do this is the array NJR in which is specified the expected annual increment of full-time transfer students due to the planned extension and outreach efforts. In the example,

NJR = 4 FT, 1 PT for Engineering
4 FT, 8 PT for BSET
2 FT, 0 PT for Architecture
8 FT, 3 PT for Other
1 FT, 6 PT for Non-matriculated

The Institute's planned retention program is provided for by the array ICR. The value of ICR/10 represents a percentage increase in full-time student continuation ratio, incremented in 6 annual steps, each of which equals ICR/60. The members of the ICR arrays are:

1. Second semester sophomore year to first semester junior year
2. First semester freshman year to second semester freshman year
3. Second semester freshman year to first semester sophomore year
4. First semester sophomore year to second semester sophomore year.

---

*For simplicity, the block diagram does not show each semester.

**Except for small changes due to improvement in retention, as discussed later.

In the example, ICR is equal to 10 -- a 1/6 per cent increase in continuation ratio for each of six years -- except for the middle of the sophomore year, where double this value is used.

The promotion process is repeated individually for the junior and senior years of each discipline. At the end of the senior year a distribution factor is again applied -- this time to determine numbers of June and October graduates. This determination is considered to be relatively inaccurate because the number of graduates is based on the number of full-time seniors, whereas many students become part-time students in the semester prior to graduation. Results are printed on page 1 of the computer printout.

Pages 2 - 7 shows, for junior division and then for each discipline of the senior division, the numbers of full-time students, the part-time student ratio, the number of part-time student, the sum of full-time plus part-time headcounts, and the full-time equivalent students.

Page 8 includes the relatively small numbers of full-time non-matriculated students (assumed to be juniors not attached to any of the four disciplines). Currently these students are projected as constant over the projection years.

Pages 9 - 11 sum the fall and spring full-time enrollment headcounts and full-time equivalent students by discipline, and give the overall totals.

Finally, the computer prints the graphs which follow page 11 of the printout.

```
                         NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                  DATE; 5-12-80    PAGE 1
ENROLL.PROJ.RUN 56 ;FIRST FTF;CSTRA C,X; NJR=4.4,2,08,1;ICR=10,10,10,20,05/14/80
CASE 03X; QSPY=50,QSPB=10,DEY=00; FSPY=60,IEOP=41 DSLC=00; JODS=15,25; NEWP=12
         NJR= 4, 4, 2, 8, 1; ICR=10.10.10.20

TOTAL FULL-TIME UNDERGRADUATE ENROLLMENT HEADCOUNT FOR FALL & SPRING SEMESTERS

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
       ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

  JR. DIV.
     FALL SEMES.
       1523  1653  1778  1733  1743  1797  1824  1821  1807  1791  1818  1877  1903  1860  1787  1787  1841  1881  1927
     SPRING SEM.
       1395  1405  1343  1414  1421  1464  1490  1493  1486  1477  1495  1539  1562  1532  1477  1472  1512  1544  1570

  ENGINEERING
     FALL SEMES.
        991   840   850   718   756   797   811   844   866   878   882   885   900   931   947   936   913   919   947
     SPRING SEM.
        931   875   838   724   739   791   802   834   856   870   875   878   891   921   939   930   907   910   937

  ENG. TECHNOL
     FALL SEMES.
        164   159   142   118   138   145   151   159   165   172   176   181   187   195   200   203   206   211   219
     SPRING SEM.
        162   148   120    97   116   124   129   134   140   146   150   154   159   165   170   172   175   178   185

  ARCHITECTURE
     FALL SEMES.
        164   109   117   132   144   149   161   169   178   185   190   195   202   210   216   219   220   223   230
     SPRING SEM.
        175   142   134   143   155   160   173   182   192   200   205   211   219   226   232   236   237   240   248

  ALL OTHER
     FALL SEMES.
        142   118   147   115   133   146   159   174   187   197   207   217   230   244   255   262   268   279   293
     SPRING SEM.
        157   134   159   132   143   161   175   191   206   217   227   240   253   268   281   289   296   306   322

  NON-MATRIC.
     FALL SEMES.
         48    40    33    38    39    40    41    42    43    44    45    46    47    48    49    50    51    52    53
     SPRING SEM.
         82    35    44    48    49    50    51    52    53    54    55    56    57    58    59    60    61    62    63

  **TOTAL**

     FALL SEMES.
       3032  2919  3067  2854  2953  3074  3147  3209  3246  3267  3318  3401  3469  3488  3454  3457  3499  3565  3669

     SPRING SEM.
       2902  2739  2638  2558  2623  2750  2820  2886  2933  2964  3007  3078  3141  3170  3158  3159  3188  3240  3333

  *GRADUATES*

        692   611   690   553   501   582   597   616   652   673   686   699   709   734   762   773   772   763   786
```

```
                                  NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                         DATE: 5-12-80     PAGE 2
ENROLL.PROJ.RUN 56 ;FIPST FTF;DSTRB C,X; NJR=4.4,2,08.1;ICR=10.10,10,20,05/14/80
CASE M3X: OSPY=50,OSPD=1L,D=Y=00; ESPY=60.IEDP=4; DSLG=00; JOBS=15.25; NEWP=12
        NJR= 4, 4, 2, 8, 1; ICR=10,10,10.20

TOTAL UNDERGRADUATE STUDENT HEADCOUNT BY CLASS: FULL-TIME, PART-TIME AND TOTAL STUDENTS

FALL    1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG    1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
        ####  ####  ####  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****

   FROSH JR DIV
      FALL SEMES.

PTR    WGTD. AVG.:   .237
PTR     0.23   .23   .24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24  0.24
F.T.     821  1084  1188  1093  1119  1159  1165  1158  1145  1133  1165  1209  1213  1169  1117  1142  1183  1204  1240
P.T.     196   251   288   259   265   275   276   274   271   268   276   284   287   277   265   271   280   285   294
TOTL    1 11  1335  1476  1352  1384  1434  1441  1432  1416  1401  1441  1495  1500  1446  1382  1413  1463  1489  1534
FTES     448   592   651   598   612   634   638   634   627   620   638   662   664   640   611   625   647   659   679

      SPRING SEM.

PTR    WGTD. AVG.:   .277
PTR     0.28   .29   .27  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28  0.28
F.T.     714   820   855   831   849   878   883   880   872   865   887   918   920   890   854   872   900   914   939
P.T.     199   231   235   235   235   243   244   244   241   239   246   254   255   246   236   241   249   253   260
TOTL     913  1059  1090  1066  1084  1121  1127  1124  1113  1104  1133  1172  1175  1136  1090  1113  1149  1167  1199
FTES     392   455   469   456   466   482   485   483   477   475   487   504   505   489   469   479   494   502   516

   SOPH JR DIV
      FALL SEMES.

PTR    WGTD. AVG.:  0.321
PTR     0.31   .31  0.33  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32  0.32
F.T.     702   569   590   640   624   638   659   663   662   658   653   668   690   691   670   645   658   677   687
P.T.     218   177   195   205   200   205   211   213   212   211   209   214   221   222   215   207   211   217   220
TOTL     920   746   785   845   824   843   870   876   874   869   862   882   911   913   885   852   869   894   907
FTES     394   320   334   361   352   360   372   374   373   371   368   377   389   390   378   364   371   382   387

      SPRING SEM.

PTR    WGTD. AVG.:  0.390
PTR     0.35   .35   .43  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39  0.39
F.T.     681   577   488   584   572   586   607   613   614   612   608   621   642   642   623   600   612   630   639
P.T.     237   201   211   228   223   229   237   239   240   239   237   242   251   251   243   234   239   246   249
TOTL     918   778   699   812   795   815   844   852   854   851   845   863   893   893   866   834   851   874   888
FTES     383   325   282   333   326   334   346   350   350   349   347   354   366   366   355   342   349   359   365
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                              NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                      DATE: 5-12-80     PAGE 3
ENROLL.PROJ.RUN 56 :FIRST FTE;DSTRB C.X; NJR=4.4.2.08.1;ICR=10.10.10.20.05/14/80
CASE M3X: OSPY=53,OSPB=10,DSY:=00; FSPY=60,IEOP=41 DSLC=00; JODS=15,25; NEWP=12
      NJR= 4, 4, 2, 6, 1; ICR=10.10.10.20

TOTAL UNDERGRADUATE STUDENT HEADCOUNT BY CLASS: FULL-TIME, PART-TIME AND TOTAL STUDENTS

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
       ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

   JR. ENGRG.
      FALL SEMES.

PTR    WGTD. AVG.:   0.359
PTR     .37   .35   .36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36  0.36
F.T.   [illegible]   535   557   438   529   523   540   564   574   580   582   583   598   621   625   612   596   610   631
P.T.    221   186   203   157   190   188   194   203   206   208   209   209   215   223   225   220   214   219   227
TOTL    823   721   760   595   719   711   734   767   780   788   791   792   813   844   850   832   810   829   858
FTES    349   308   322   253   306   312   312   326   331   335   336   337   345   359   361   354   344   352   365

      SPRING SEM.

PTR    WGTD. AVG.:   0.457
PTR    0.44   .44   .47  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46  0.46
F.T.    515   496   475   385   464   459   474   495   504   509   511   512   525   545   549   537   523   536   554
P.T.    229   219   224   176   212   210   217   226   230   233   234   234   240   249   251   245   239   245   253
TOTL    744   715   699   561   676   669   691   721   734   742   745   746   765   794   800   782   762   781   807
FTES    302   291   281   227   273   270   279   292   297   300   301   302   309   321   323   316   308   316   326

   SR. ENGRG.
      FALL SEMES.

PTR    WGTD. AVG.:   0.480
PTR    0.46   .46  0.51  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48  0.48
F.T.    389   305   293   280   227   274   271   280   292   298   300   302   302   310   322   324   317   309   316
P.T.    177   139   148   134   109   132   130   134   140   143   144   145   145   149   155   156   152   148   152
TOTL    566   444   441   414   336   406   401   414   432   441   444   447   447   459   477   480   469   457   468
FTES    232   182   177   168   136   164   163   168   175   179   180   181   181   186   193   194   190   189   190

      SPRING SEM.

PTR    WGTD. AVG.:   0.471
PTR    0.40   .40   .54  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47
F.T.    416   379   363   339   275   332   328   339   354   361   364   366   366   376   390   393   384   374   383
P.T.    166   151   197   160   129   156   154   160   167   170   171   172   172   177   184   185   181   176   180
TOTL    582   530   560   499   404   488   482   499   521   531   535   538   538   553   574   578   565   550   563
FTES    241   219   219   201   163   196   194   201   209   214   215   216   216   222   231   232   227   221   227
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                                   NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                        DATE: 5-12-80    PAGE 4
ENROLL,PROJ,RUN 56 ;FIRST FT+;DSTRB C,X; NJR=4,4,2,08,1;ICH=10,10,10,20,05/14/80
CASE M3X; DSPY=50,DSPG=10,D=Y=00; FSPY=60,IEOP=4; DSLC=00; JOBS=15,25; NEWP=12
       NJR= 4, 4, 2, 8, 1; ICH=10,10,10,20

TOTAL UNDERGRADUATE STUDENT HEADCOUNT BY CLASS: FULL-TIME, PART-TIME AND TOTAL STUDENTS

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
       ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

   JR. TECHNOL.
      FALL SEMES.

PTR    WGTD. AVG.:  1.785
PTR    1.70  1.70  1.87  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78  1.78
F.T.     96   119   101    96   110   113   118   125   129   134   137   141   146   152   156   158   160   165   171
P.T.    153   202   189   187   212   218   227   239   246   255   261   268   277   287   294   298   302   310   321
TOTL    243   321   290   283   322   331   345   364   375   389   398   409   423   439   450   456   462   475   492
FTES     74    98    86    83    95    98   102   108   111   115   118   121   126   130   134   136   137   141   146

      SPRING SEM.

PTR    WGTD. AVG.:  2.609
PTR    1.81  1.81  3.41  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61  2.61
F.T.     90    89    49    63    72    74    77    81    84    87    89    91    95    98   101   102   103   106   110
P.T.    163   161   167   164   188   193   201   211   219   227   232   237   248   256   264   266   269   277   287
TOTL    253   250   216   227   260   267   278   292   303   314   321   328   343   354   365   368   372   383   397
FTES     75    74    55    62    71    72    75    79    82    85    87    89    93    96    99   100   101   104   108

   SR. TECHNOL.
      FALL SEMES.

PTR    WGTD. AVG.:  1.899
PTR    1.70  1.70  2.10  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90  1.90
F.T.     74    40    41    22    28    32    33    34    36    38    39    40    41    43    44    45    46    46    48
P.T.    126    68    86    42    53    61    63    65    68    72    74    76    78    82    84    85    87    87    91
TOTL    200   108   127    64    81    93    96    99   104   110   113   116   119   125   128   130   133   133   139
FTES     61    33    37    19    24    28    28    29    31    33    34    34    35    37    38    39    40    40    41

      SPRING SEM.

PTR    WGTD. AVG.:  1.359
PTR    1.34  1.34  1.38  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36  1.36
F.T.     92    59    71    34    44    50    52    53    56    59    61    63    64    67    69    70    72    72    75
P.T.    123    79    98    46    60    68    71    72    76    80    83    86    87    91    94    95    98    98   102
TOTL    215   138   169    80   104   118   123   125   132   139   144   149   151   158   163   165   170   170   177
FTES     69    44    54    26    33    38    39    40    42    44    46    47    48    50    52    53    54    54    56
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                                    NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4                        DATE: 5-12-80     PAGE 5

ENROLL.PROJ.RUN 56 (FIRST FTF;OSTRB C,X; NJR=4,4,2,08.1;ICH=10,10,10,20,05/14/80
CASE M3X: OSPY=50,OSPB=14,DFY= 0; FSPY=60,IEOP=41 DSLC=00; JODS=15,25; NEWP=12
        NJR= 4, 4, 2, 0, 1; ICH=10,10,10,20

TOTAL UNDERGRADUATE STUDENT HEADCOUNT BY CLASS! FULL-TIME, PART-TIME AND TOTAL STUDENTS

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
       ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

    JR. ARCH.
      FALL SEMES.

PTR   WGTD. AVG.:  0.065
PTR   0.07   .05   .07  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06  0.06
F.T.    60    50    69    51    64    64    68    72    75    77    79    81    84    88    90    90    90    93    97
P.T.     4     3     5     3     4     4     4     5     5     5     5     5     5     6     6     6     6     6     6
TOTL    64    61    74    54    68    68    72    77    80    82    84    86    89    94    96    96    96    99   103
FTES    31    30    36    27    33    33    36    38    39    40    41    42    44    46    47    47    47    49    51

      SPRING SEM.

PTR   WGTD. AVG.:  0.068
PTR   0.01   .02   .12  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07  0.07
F.T.    74    60    58    50    62    62    66    70    73    75    77    79    82    85    87    87    87    90    94
P.T.     1     1     7     3     4     4     4     5     5     5     5     5     6     6     6     6     6     6     6
TOTL    75    61    65    53    66    66    70    75    78    80    82    84    88    91    93    93    93    96   100
FTES    38    31    31    26    32    32    34    36    38    39    40    41    43    44    45    45    45    47    49

    SR. ARCH.
      FALL SEMES.

PTR   WGTD. AVG.:  0.208
PTR   0.16   .16   .26  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21  0.21
F.T.    58    38    31    49    42    52    52    56    59    62    63    65    67    69    72    73    73    73    76
P.T.     9     6     8    10     9    11    11    12    12    13    13    13    14    14    15    15    15    15    16
TOTL    67    44    39    59    51    63    63    68    71    75    76    78    81    83    87    88    88    88    92
FTES    31    21    17    27    23    29    29    31    32    34    35    36    37    38    40    40    40    40    42

      SPRING SEM.

PTR   WGTD. AVG.:  0.092
PTR   0.10   .09   .09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09  0.09
F.T.    61    43    45    54    46    57    57    62    65    68    69    72    74    76    79    80    80    80    84
P.T.     6     4     4     5     4     5     5     6     6     6     6     7     7     7     7     7     7     7     8
TOTL    67    47    49    59    50    62    62    68    71    74    75    79    81    83    86    87    87    87    92
FTES    32    22    24    29    24    30    30    32    34    36    36    38    39    40    41    42    42    42    44
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                                        NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                                   DATE: 5-12-80     PAGE 6
ENROLL.PROJ.RUN 56 (FIRST FTE:-STRH C,X: NJR=4,4,2,08,1;ICH=10,10,10,20,05/14/80
CASE H3X: DSPY=50,DSPH=10,DEY=(0; FSPY=60,IEOP=4; DSLC=00; JOBS=15,25; NEHP=12
        NJR= 1. 4. 2. 0. 1; ICH=10.10.10.20

TOTAL UNDERGRADUATE STUDENT HEADCOUNT BY CLASS: FULL-TIME, PART-TIME AND TOTAL STUDENTS

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
       ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

   5TH YR ARCH.
       FALL SEMES.

PTH    WGTD. AVG.:  .471
PTH    0.70   .77   .18  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47  0.47
F.T.     16    13    17    32    38    33    41    41    44    46    48    49    51    53    54    56    57    57    57
P.T.     35    10     3    15    18    16    19    19    21    22    23    23    24    25    25    26    27    27    27
TOTL     51    23    20    47    56    49    60    60    65    68    71    72    75    78    79    82    84    84    84
FTES     30     8     9    19    23    20    24    24    26    28    29    29    30    32    32    33    34    34    34

       SPRING SEM.

PTH    WGTD. AVG.:  .195
PTH    0.22   .23   .16  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20  0.20
F.T.     40    39    31    39    47    41    50    50    54    57    59    60    63    65    66    69    70    70    70
P.T.      9     9     5     8     9     8    10    10    11    11    12    12    12    13    13    13    14    14    14
TOTL     49    48    36    47    56    49    60    60    65    68    71    72    75    78    79    82    84    84    84
FTES     22    21    17    21    25    22    27    27    29    31    32    33    34    35    36    37    38    38    38
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                                   NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                                  DATE: 5-12-80    PAGE 7
ENROLL.PROJ.RUN 56 ;FIRST FT=STRD C,X; NJR=4,4,2,08,1;ICR=10,10,10,20,05/14/80
CASE N3X: DSPY=50,DSPD=10,D=Y,  ; FSPY=60,IEOP=4; DSLC=001 JOBS=15,25; NEWP=12
       NJR= 4, 4, 2, 8, 1; ICR=10,10,10,20

TOTAL UNDERGRADUATE STUDENT HEADCOUNT BY CLASS: FULL-TIME, PART-TIME AND TOTAL STUDENTS

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPNG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
       ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

  JR. OTHER
     FALL SEMES.

PTR    WGTD. AVG.:  0.349
PTR    0.32   .27   .41  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35  0.35
F.T.     91    89   119    84   109   115   126   138   147   155   163   170   181   192   200   205   209   219   230
P.T.     29    24    49    29    38    40    44    48    51    54    57    59    63    67    70    72    73    76    80
TOTL    120   113   168   113   147   155   170   186   198   209   220   229   244   259   270   277   282   295   310
FTES     52    50    70    48    63    66    73    79    85    89    94    98   104   111   115   118   120   126   132

     SPRING SEM.

PTR    WGTD. AVG.:  0.299
PTR    0.31   .31  0.29  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30  0.30
F.T.     91    90   101    78   101   107   117   128   136   143   150   157   167   177   184   189   192   201   211
P.T.     28    28    29    23    30    32    35    38    41    43    45    47    50    53    55    56    57    60    63
TOTL    119   118   130   101   131   139   152   166   177   186   195   204   217   230   239   245   249   261   274
FTES     51    51    56    44    57    60    66    72    76    80    84    88    94    99   103   106   108   113   118

  SR. OTHER
     FALL SEMES.

PTR    WGTD. AVG.:  1.071
PTR    0.84   .86  1.29  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07  1.07
F.T.     51    29    28    31    24    31    33    36    40    42    44    47    49    52    55    57    59    60    63
P.T.     43    25    36    33    26    33    35    39    43    45    47    50    52    56    59    61    63    64    67
TOTL     94    54    64    64    50    64    68    75    83    87    91    97   101   108   114   118   122   124   130
FTES     34    19    21    22    17    22    23    26    28    30    31    33    35    37    39    40    42    42    45

     SPRING SEM.

PTR    WGTD. AVG.:  0.611
PTR    0.64   .64  0.59  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61  0.61
F.T.     66    44    58    54    42    54    58    63    70    74    77    83    86    91    97   100   104   105   111
P.T.     42    28    34    33    26    33    35    39    43    45    47    51    53    56    59    61    64    64    68
TOTL    108    72    92    87    68    87    93   102   113   119   124   134   139   147   156   161   168   169   179
FTES     41    27    36    33    26    33    36    39    43    46    47    51    53    56    60    62    64    65    69
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                                   NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                          DATE: 5-12-80     PAGE 8
ENROLL.PROJ.RUN 56 ; FIRST FTE:D.TRD C,X; NJR=4,4,2,08,1;ICR=10,10,10,20,05/14/80
CASE N3X: USPY=50,USHM=10,URY=U,; FSPY=60,IEOP=41 DSLG=00; JOBS=15.25; NEHP=12
       NJR= 4, 4, 2, 6, 1; ICR 10,10,10,20

TOTAL UNDERGRADUATE STUDENT HEADCOUNT BY CLASS: FULL-TIME, PART-TIME AND TOTAL STUDENTS

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
       ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****  ****

  NON-MATRIC.
     FALL SEMES.

PTR    WGTD. AVG.: 6.862
PTR    6.42  4.65  6.46  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86  6.86
F.T.     46    40    33    38    39    40    41    42    43    44    45    46    47    48    49    50    51    52    53
P.T.    310   186   280   261   268   274   281   288   295   302   309   316   323   329   336   343   350   357   364
TOTL    356   226   313   299   307   314   322   330   338   346   354   362   370   377   385   393   401   409   417
FTES     81    55    68    67    69    71    73    74    76    78    80    82    83    85    87    89    90    92    94

     SPRING SEM.

PTR    WGTD. AVG.: 6.208
PTR    7.52  4.94  6.61  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21  6.21
F.T.     82    35    44    48    49    50    51    52    53    54    55    56    57    58    59    60    61    62    63
P.T.    617   173   291   298   304   310   317   323   329   335   341   348   354   360   366   373   379   385   391
TOTL    699   208   335   346   353   360   368   375   382   389   396   404   411   418   425   433   440   447   454
FTES    153    49    75    78    80    81    83    85    86    88    90    91    93    95    96    98   100   101   103
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F-30

324

323

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                                  NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                              DATE, 5-12-80     PAGE 9
ENROLL.PROJ.RUN 56 (FIRST FTH) STRH C,X) NJR=4.4.2.00.1)ICH=10.10.10.20.05/14/80
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       NJR= 4. 4. 2. 0. 1) ICI=10.10.10.20

TOTAL FULL-TIME AND PART-TIME UNDERGRADUATE ENROLLMENT HEADCOUNT FOR FALL & SPRING SEMESTERS

FALL   1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG   1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
       ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

  JUNIOR DIV.
     FALL SEMES.
F.T.   1523  1653  1778  1733  1743  1797  1824  1821  1807  1791  1818  1877  1903  1860  1787  1787  1841  1881  1927
P.T.    478   428   483   464   465   480   487   487   483   479   485   500   508   499   480   478   491   502   514
FTES    842   912   985   959   964   994  1010  1008  1000   991  1006  1039  1053  1030   989   989  1018  1041  1066
     SPRING SEM.
F.T.   1395  1415  1343  1414  1421  1464  1490  1493  1486  1477  1495  1539  1562  1532  1477  1472  1512  1544  1578
P.T.    436   432   446   454   458   472   481   483   481   478   483   496   506   497   479   475   488   499   509
FTES    775   780   751   789   792   816   831   833   829   824   834   858   871   855   824   821   843   861   881

  ENGINEERING
     FALL SEMES.
F.T.    991   840   650   718   756   797   811   844   866   878   882   885   900   931   947   936   913   919   947
P.T.    390   325   351   291   299   320   324   337   346   351   353   354   360   372   380   376   366   367   379
FTES    581   490   499   421   442   466   475   494   506   514   516   518   526   545   554   548   534   537   555
     SPRING SEM.
F.T.    931   875   838   724   739   791   802   834   858   870   875   878   891   921   939   930   907   910   937
P.T.    395   370   421   336   341   366   371   386   397   403   405   406   412   426   435   430   420   421   433
FTES    543   510   500   428   436   460   473   493   506   514   516   518   525   543   554   548   535   537   553

  ENG. TECHNOL
     FALL SEMES.
F.T.    164   159   142   118   138   145   151   159   165   172   176   181   187   195   200   203   206   211   219
P.T.    279   270   275   229   265   279   290   304   314   327   335   344   355   369   378   383   389   397   412
FTES    135   131   123   102   119   126   130   137   142   148   152   158   161   167   172   175   177   181   187
     SPRING SEM.
F.T.    182   148   120    97   116   124   129   134   140   146   150   154   159   165   170   172   175   178   185
P.T.    286   240   265   210   248   261   272   283   295   307   315   323   335   347   358   361   367   375   389
FTES    144   118   119    84   104   110   114   119   124   129   133   136   141   146   151   153   155   158   164
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                         NJIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                    DATE; 5-12-80     PAGE 10
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       NJR= 4, 4, 2, 8, 1; ICR-10,10,10,20

TOTAL FULL-TIME AND PART-TIME UNDERGRADUATE ENROLLMENT HEADCOUNT FOR FALL & SPRING SEMESTERS

FALL    1977  1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995
SPRG    1978  1979  1980  1981  1982  1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996
        ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####  ####

   ARCHITECTURE
      FALL SEMES.
F.T.     164   109   117   132   144   149   161   169   178   185   190   195   202   210   216   219   220   223   230
P.T.      40    19    16    28    31    31    34    36    38    40    41    41    43    45    46    47    48    48    49
FTES      92    59    62    73    79    82    89    93    97   102   105   107   111   116   119   120   121   123   127
      SPRING SEM.
F.T.     175   142   134   143   155   160   173   182   192   200   205   211   219   226   232   236   237   240   248
P.T.      16    11    16    16    17    17    19    21    22    22    23    24    25    26    26    26    27    27    28
FTES      92    74    72    75    81    84    91    95   101   106   108   112   116   119   122   124   125   127   131

   ALL OTHER
      FALL SEMES.
F.T.     142   118   147   115   133   146   159   174   187   197   207   217   230   244   255   262   268   279   293
P.T.      72    49    85    62    64    73    79    87    94    99   104   109   115   123   129   133   136   140   147
FTES      86    69    91    75    80    88    96   105   113   119   125   131   139   148   154   158   162   168   177
      SPRING SEM.
F.T.     157   134   159   132   143   161   175   191   206   217   227   240   253   268   281   289   296   306   322
P.T.      70    56    63    56    56    65    70    77    84    88    92    98   103   109   114   117   121   124   131
FTES      92    70    92    77    81    93   102   111   119   126   131   139   147   155   163   168   172   178   187

   NON-MATRIC.
      FALL SEMES.
F.T.      48    40    33    38    39    40    41    42    43    44    45    46    47    48    49    50    51    52    53
P.T.     308   186   280   261   268   274   281   288   295   302   309   316   323   329   336   343   350   357   364
FTES      81    55    68    67    69    71    73    74    76    78    80    82    83    85    87    89    90    92    94
      SPRING SEM.
F.T.      62    35    44    48    49    50    51    52    53    54    55    56    57    58    59    60    61    62    63
P.T.     617   173   291   298   304   310   317   323   329   335   341   348   354   360   366   373   379   385   391
FTES     153    49    75    78    80    81    83    85    86    88    90    91    93    95    96    98   100   101   103
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                              UNIT ENROLLMENT PROJECTIONS MODEL PROGRAM ENROL4
                                                                                        DATE; 5-12-80     PAGE 11
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        NJR= 4, 4, 2, 8, 1; ICR:10,10,10,20

TOTAL FULL-TIME AND PART-TIME UNDERGRADUATE ENROLLMENT HEADCOUNT FOR FALL & SPRING SEMESTERS

FALL   1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995
SPRG   1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996
       #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### #### ####

  **TOTALS**

    FALL SEMES.

F.T.   3 32 2919 3 67 2854 2953 3074 3147 3209 3246 3267 3318 3401 3469 3488 3454 3457 3499 3565 3669

P.T.   1513 1277 1190 1335 1492 1457 1495 1539 1570 1598 1627 1664 1704 1737 1749 1760 1780 1811 1865

TOTL   4545 4196 4457 4189 4445 4531 4642 4748 4816 4865 4945 5065 5173 5225 5203 5217 5279 5376 5534

FTES   1817 1716 1628 1692 1753 1827 1873 1911 1934 1952 1984 2032 2073 2091 2075 2079 2102 2142 2206

    SPRING SEM.

F.T.   2922 2739 2638 2558 2623 2750 2820 2886 2935 2964 3007 3078 3141 3170 3158 3159 [illegible] 3240 3333

P.T.   1820 1285 1502 1374 1424 1491 1530 1573 1608 1633 1659 1695 1735 1765 1778 1782 1802 1831 1881

TOTL   4742 4024 4140 3932 4047 4241 4350 4459 4543 4597 4666 4773 4876 4935 4936 4941 4990 5071 5214

FTES   1799 1609 1399 1535 1576 1656 1694 1736 1765 1787 1812 1854 1893 1913 1910 1912 1930 1962 2019

APPROXIMATE ANNUAL FULL-TIME EQUIVALENT UNDERGRADUATE STUDENTS*

TOTL   3616 3325 3127 3227 3329 3477 3567 3647 3699 3739 3796 3886 3966 4004 3985 3991 4032 4104 4225
 *DOES NOT INCLUDE CERTIFICATE PROGRAM AND SUMMER SESSION STUDENTS.
```

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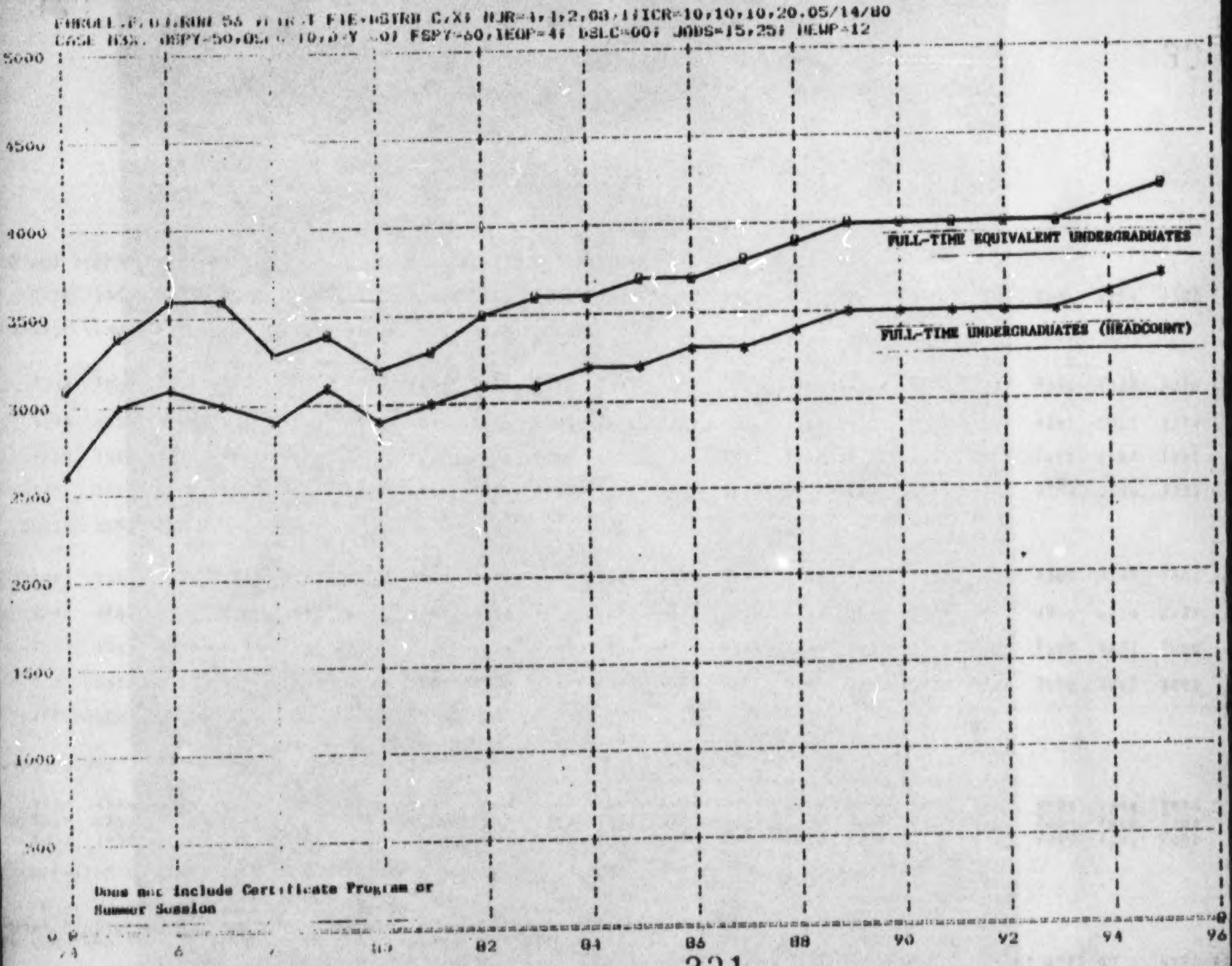
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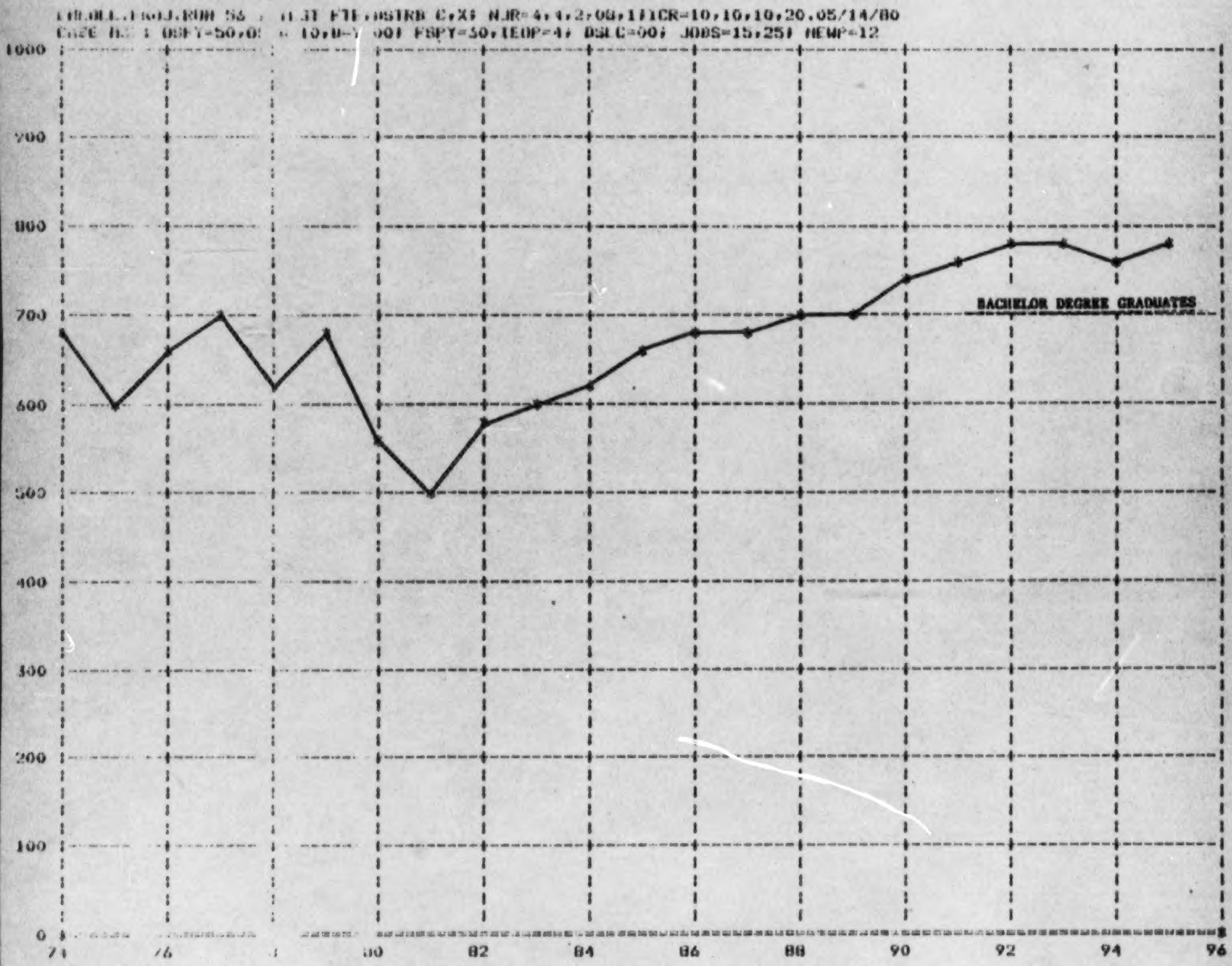
4500
4000
3500
3000
2500
2000
1500
1000
500
0
74
76
78
80
82
84
86
88
90
92
94
96
FULL-TIME EQUIVALENT UNDERGRADUATES
FULL-TIME UNDERGRADUATES (HEADCOUNT)
Does not include Certificate Program or Summer Session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CASE B. ; DSFY=50,0 , 10,0-Y 00; FSPY=50,IEOP=4; DSLC=00; JOBS=15,25; NEWP=12
1000
900
800
700
600
500
400
300
200
100
0
74
76
78
80
82
84
86
88
90
92
94
96
BACHELOR DEGREE GRADUATES

## Appendix G

## RETENTION

Source of Data:

Retention Subcommittee,
Long Range Planning Committee

## TABLE 1. EXISTING SEQUENCES IN CORE COURSES

### Chemistry

Regular sequence: Chem. 115, 116 (9 credits)

Remedial sequence: Chem. 111, 112, 113 (13 credits) - Slower paced; for day fall freshmen only.

Placement criterion: Toledo chemistry placement test

Also available: Chem. 101 - High school chemistry that may precede either of the above sequences.

### English/Humanities

Regular sequence: Eng. 111, Hum. 112, 231 (9 credits)

Remedial sequence: Eng. 110, 111, Hum. 112, 231 (12 credits) - First course is in writing skills.

Placement criteria:
Scholastic Aptitude Test - Verbal score
Test of Standard Written English
New Jersey College Basic Skills Placement Test

Also available: Eng. 101 (3 credits) - To precede either of the above sequences, where English is a second language.

### Mathematics

Regular sequence: Math 111, 112, 221, 222 (16 credits) - For Engineering students.

Remedial sequence: Math 107, 111, 112, 221, 222 (19 credits) - First course is primarily college algebra.

Placement criteria:
Scholastic Aptitute Test - Math Score
Mathematics Level I Achievement Test Score
Mathematics/Physics Placement Test

### Physics

Regular sequence: Phys. 111, 112, 231 (13 credits) - For Engineering students

Remedial sequence: Phys. 105, 106, 107, 231 (17 credits) - Slower paced; for day fall freshmen only.

Placement criteria: Same as for Mathematics

## TABLE 2. A THREE-YEAR DEVELOPMENT SCHEDULE FOR RETENTION PLAN

1980/81:

1. Establish Retention Council
    a. Review and improve freshman counseling and advising
    b. Plan attrition studies
    c. Begin review of remedial course offerings
    d. Define alternative paths toward degress
2. Establish Tutoring Center in a dedicated location.
3. Continue present tutoring available to students who seek help; expand mandatory tutoring for conditionally admitted students; extend mandatory tutoring to freshmen on probation.
4. Move toward mandatory placement in freshmen courses.

1981/82

1. Continue Retention Council
    a. Continue review and improvement of freshman counseling and advising
    b. Study advisement of transfer students.
    c. Review summer course offerings
2. Initiate longitudinal retention studies
3. Expand tutoring to all freshmen
4. Develop optional summer program for non-EOP students
5. Develop Learning Center software

1982/83

1. Continue Retention Council
2. Define retention administrative structure
3. Implement Learning Center software use
4. Expand tutoring to all sophomores, mandatory for those on probation.
5. Complete development of central Tutoring/Learning Center facility.

# Appendix H

# RESOURCE STATISTICS

Sources of Data:

Personnel Office
Finance Office
Office of Planning and
Institutional Research

## FULL-TIME INSTRUCTIONAL STAFF: 1979 - 1980

| Department | N | Doctorate | Prof. | Assoc. | Asst. | Inst. | Special Lecturer | Male | Female |
|---|---|---|---|---|---|---|---|---|---|
| Arch. | 23 | 1 | 1 | 12 | 5 | - | 5 | 21 | 2 |
| Chem. E. & Chemistry | 36 | 33 | 14 | 9 | 9 | - | 4 | 34 | 2 |
| Civil & Env. Engrg. | 26 | 19 | 9 | 7 | 9 | - | 1 | 26 | - |
| CIS | 13 | 9 | 2 | 1 | 8 | - | 2 | 11 | 2 |
| E.E. | 30 | 20 | 13 | 14 | 3 | - | - | 30 | - |
| Phys. Ed. | 3 | 0 | 1 | 2 | - | - | - | 3 | - |
| Humanities | 24 | 18 | 8 | 7 | 6 | 1 | 1 | 21 | 3 |
| I.E. | 14 | 7 | 5 | 4 | 1 | - | 4 | 14 | - |
| Math | 25 | 15 | 4 | 11 | 7 | - | 3 | 22 | 3 |
| M.E. | 26 | 15 | 9 | 11 | 5 | - | 1 | 26 | - |
| O.S.S. | 17 | 10 | 4 | 4 | 7 | - | 2 | 13 | 4 |
| Physics | 25 | 16 | 6 | 12 | 8 | - | - | 24 | 1 |
| Total | 262<br>100% | 164<br>62.6% | 74<br>28.2% | 94<br>35.9% | 68<br>25.9% | 1<br>0.4% | 25<br>9.5% | 245<br>93.5% | 17<br>6.5% |

Note: Excludes 8 administrators holding academic rank and tenure.

## AGE DISTRIBUTION OF ALL FULL-TIME INSTRUCTIONAL FACULTY ON BOTH

## 9 - 10 AND 11 - 12 MONTH SALARY CONTRACTS

(As of October 1, 1979)

| AGE CATEGORIES | PROFESSORS | ASSOCIATE PROFESSORS | ASSISTANT PROFESSORS | INSTRUCTORS | LECTURERS | TOTAL |
|---|---|---|---|---|---|---|
| UNDER 25 YEARS | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 TO 34 YEARS | 0 | 3 | 14 | 0 | 8 | 25 |
| 35 TO 44 YEARS | 11 | 33 | 31 | 0 | 5 | 80 |
| 45 TO 54 YEARS | 23 | 33 | 12 | 1 | 4 | 73 |
| 55 TO 59 YEARS | 25 | 21 | 9 | 0 | 1 | 56 |
| 60 TO 62 YEARS | 8 | 4 | 1 | 0 | 3 | 16 |
| 63 TO 65 YEARS | 6 | 0 | 1 | 0 | 3 | 10 |
| 66 TO 69 YEARS | 1 | 0 | 0 | 0 | 1 | 2 |
| OVER 69 YEARS | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 74 | 94 | 68 | 1 | 25 | 262 |

E-2

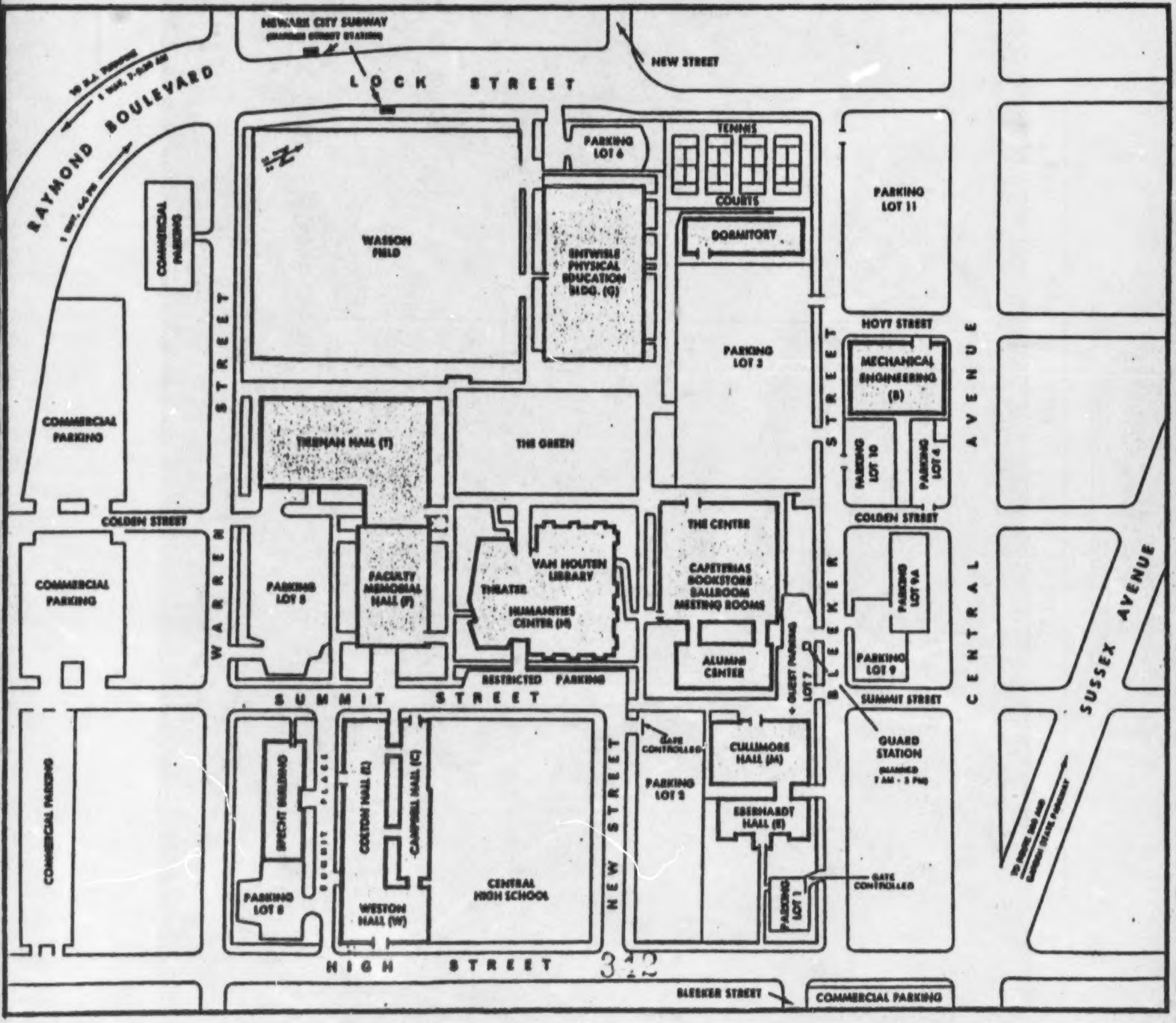
## FULL-TIME EMPLOYEES
## JANUARY 1975 -- JANUARY 1979*

| | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|
| Instruction | | | | | |
| Faculty | 243 | 245 | 237 | 267 | 270 |
| Support | 52 | 53 | 50 | 59 | 59 |
| Subtotal Instruction | 295 | 298 | 287 | 326 | 329 |
| Research | 4 | 6 | 5 | 5 | 5 |
| Public Services | 3 | 3 | 2 | 3 | 3 |
| Academic Suport | 46 | 40 | 40 | 45 | 47 |
| Student Services | 59 | 55 | 52 | 56 | 54 |
| General Institute # | 60 | 69 | 72 | 83 | 85 |
| Physical Plant # | 51 | 53 | 48 | 63 | 68 |
| Auxiliary Enterprises | 32 | 30 | 31 | 31 | 32 |
| Institute Grand Total | 550 | 554 | 537 | 612 | 623 |

*Payroll headcount as of January 31 of each year listed.

#Security and custodial services were changed from contract personnel to employees.

# New Jersey Institute of Technology Campus


NEWARK CITY SUBWAY
LOCK STREET
NEW STREET
RAYMOND BOULEVARD
COMMERCIAL PARKING
WASSON FIELD
PARKING LOT 6
TENNIS COURTS
DORMITORY
ENTWISLE PHYSICAL EDUCATION BLDG. (G)
PARKING LOT 11
PARKING LOT 3
HOYT STREET
MECHANICAL ENGINEERING (B)
WARREN STREET
COMMERCIAL PARKING
TIERNAN HALL (T)
THE GREEN
PARKING LOT 10
PARKING LOT 4
COLDEN STREET
COLDEN STREET
THE CENTER
CAFETERIAS BOOKSTORE BALLROOM MEETING ROOMS
COMMERCIAL PARKING
PARKING LOT 8
FACULTY MEMORIAL HALL (F)
THEATER
VAN HOUTEN LIBRARY
HUMANITIES CENTER (H)
ALUMNI CENTER
PARKING LOT 9A
PARKING LOT 9
CENTRAL AVENUE
SUSSEX AVENUE
BLEEKER STREET
RESTRICTED PARKING
LOT 7
SUMMIT STREET
SUMMIT STREET
GUARD STATION
GATE CONTROLLED
CULLIMORE HALL (M)
PARKING LOT 2
EBERHARDT HALL (E)
COMMERCIAL PARKING
SPECHT BUILDING
SUMMIT PLACE
COLTON HALL (L)
CAMPBELL HALL (C)
NEW STREET
CENTRAL HIGH SCHOOL
GATE CONTROLLED
PARKING LOT 1
PARKING LOT 5
WESTON HALL (W)
HIGH STREET
BLEEKER STREET
COMMERCIAL PARKING

## NJIT CAMPUS UTILIZATION

### FALL 1979

| Use | Area Acres | Per Cent |
|---|---|---|
| Buildings (Excl. Dormitory) | 4.19 | 18.7% |
| Dormitory & Grounds | 0.25 | 1.1% |
| Parking | 6.69 | 22.7% |
| Athletics | 1.62 | 7.2% |
| "The Green", etc. | 3.60 | 16.0% |
| Walkways, open space | 7.69 | 34.3% |
| TOTAL | 24.04 | 100.0% |

## HISTORICAL PROFILE OF FACILITIES

## 1975 - 1978

### NJIT PRIMARY DATA

| | 1975 | | 1978 | |
|---|---|---|---|---|
| | CLASSROOMS | LABORATORIES | CLASSROOMS | LABORATORIES |
| Total # Rooms | 74 | 24 | 81 | 55 |
| Total Number Square Ft. | 50,853 | 58,364 | 68,180 | 148,435 |
| Total Number of Stations | 2,400 | 657 | 2,000 | 849 |
| Room Hrs. Available Per Week | 3,330 | 1,080 | 3,645 | 2,475 |
| Room Hrs. Scheduled Per Week | 1,712 | 415 | 3,031 | 858 |
| Percent | 51.4% | 38.4% | 83.2% | 34.7% |

### DHE METHODOLOGY

| | | | | |
|---|---|---|---|---|
| Averg. Hrs. Scheduled Per Week | 23.1 | 17.3 | 37.4 | 15.6 |
| Contact Hrs. Scheduled Per Week | 37,949 | 9,674 | 44,824 | 7,391 |
| Contact Hrs. Available Per Week | 106,560 | 29,160 | 134,865 | 38,115 |
| Contact Hrs. Scheduled of Available | 35.6% | 33.2% | 33.2% | 19.4% |
| Hours Averg. Station Scheduled Per Week | 15.8 | 14.7 | 14.9 | 8.7 |

Source: NJ HEGIS REPORT 401

## SPACE UTILIZATION OF NJIT BUILDINGS

As of Mar. 1, 1980

| BUILDINGS | GROSS AREA | ASSIGN-ABLE AREA | CLSRM[1] | LABS[2] | EDSVS | ADMIN | OTHER ASSIGNABLE |
|---|---|---|---|---|---|---|---|
| Bleeker | 67904 | 13529[4] | 480 | 4624 | 8185 | 240 | --- |
| Campbell | 43412 | 30386 | 1850 | 14275 | 1300 | 11830 | 1131 |
| The Center[3] | 90312 | 62410 | --- | --- | 4190 | 11630 | 46590 |
| Colton | 63972 | 38419[4] | 1700 | 29739 | 3460 | 3330 | 190 |
| Cullimore | 74569 | 38848 | 9620 | --- | 1495 | 23013 | 4720 |
| Dormitory | 48705 | 28020 | --- | --- | --- | 380 | 27640[5] |
| Eberhardt | 33575 | 13198 | --- | --- | 480 | 12718 | --- |
| Faculty | 94738 | 51469 | 13510 | 31719 | 2790 | 2720 | 730 |
| Physical Ed. Bldg | 52854 | 37133 | 480 | --- | 35420[6] | 720 | 513 |
| Huamnities | 65484 | 48637 | 5190 | --- | 41827 | 980 | 640 |
| Specht | 14890 | 9613 | --- | --- | 5610 | 1783 | 2220 |
| Tiernan | 171360 | 104638 | 17790 | 66150 | 4848 | 14060 | 1790 |
| Weston | 73735 | 48785 | 17905 | 11650 | 7526 | 10744 | 960 |
| Huber[7] | 4460 | 4160 | --- | --- | --- | 4160 | --- |
| Total | 899970 | 529245[4] | 68525 | 158157 | 117131 | 98308 | 87124 |
| Per Cent |  | 100.0% | 12.9% | 29.9% | 22.1% | 18.6% | 16.5% |

[1] Includes lecture halls but not Theater.

[2] Includes architecture studios, lab service & storage.

[3] Includes the College Center and Alumni Center.

[4] Does not include 35655 sq. ft. undergoing renovation in Bleeker and 5880 sq. ft. in Colton

[5] Includes 23255 sq. ft. dormitory bedrooms.

[6] Includes Theater.

[7] Rented space, by Foundation at NJIT.

## NET ASSIGNABLE INSTRUCTIONAL AND ACADEMIC DEPARTMENT SPACE

| Dept Code | Academic Department Use Code: | Dept. Classrms 100-199 | U.G. Lab. 200-239 | Gr./R.[7] Lab. 240-299 | Offices[2] 300-399 | Services[4] 400-899 | TOTAL Assignable AREA |
|---|---|---|---|---|---|---|---|
| 002 | Chemistry | 1250 | 18230 | 7544 | 1700 | 678 | 29402 |
| 003 | Chem. Engrg. | 0 | 16879 | 10774 | 4390 | 970 | 33013 |
| 004 | Civil & Env. Engrg. | 990 | 10795 | 2210 | 6420 | 70 | 20485[18] |
| 005 | Computer & Inf. Sci. | 450 | 0 | 2790 | 2310 | 410 | 5960 |
| 006 | Elec. Engrg. | 990 | 23815 | 5919 | 6410 | 440 | 37574 |
| 007 | Humanities | 0 | 0 | 0 | 3633 | 0 | 3633 |
| 034 | Drama | 0 | 0 | 0 | 180 | 7740[3] | 7920 |
| 009 | Indus. & Mgt. Engrg | 0 | 2590 | 470 | 2934 | 516 | 6510 |
| 010 | Mathematics | 0 | 0 | 0 | 2400 | 540 | 2940 |
| 011 | Mech. Eng. | 480 | 7344 | 4865 | 6280 | 9125 | 28094[16] |
| 012 | Org. & Soc. Sci. | 0 | 0 | 0 | 2220 | 0 | 2220 |
| 014 | Physics[17] | 1100[5] | 10497 | 1700 | 2700 | 380 | 16377 |
| 038 | Architecture | 2560[6] | 28210[7] | 0 | 3880[8] | 1400 | 38050 |
| 001 | Aerospace | 0 | 0 | 0 | 2820 | 480 | 3300 |
| 099 | Unalloc. Instr. | 60225[9] | 1015[10] | 2510[11] | 2130 | 2910 | 68790 |
|  | TOTALS | 68045[9] | 119375[7] | 38782 | 52407 | 25659 | 304268[12] |

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[1] Incl. lec. prep. rm., 660; & learning rsch. center, 590
[2] Incl. conf. rms. and service areas
[3] Theater and storage
[4] Educational and other services
[5] Demo. storage only
[6] Incl. lec. rm., 1700
[7] Studios 27360; Woodshop, 850
[8] Not incl. dean, 420
[9] Not incl. Phys. Ed. 480
[10] Computer Graphics
[11] Interdisc. Research
[12] Not incl. Gym, Pool, etc. 36620
[16] Not incl. 29595 under construc.
[17] Incl. Matl. Sci.
[18] Not incl. 5410 under construc.

3/27/80

## SPACE UTILIZATION OF ADMINISTRATIVE AND SERVICE UNITS

### SPRING 1980

| ADMINISTRATIVE AND SERVICE UNITS | DEPT CODE | ASSIGN-ABLE AREA | EDSVC | ADMIN | OTHER |
|---|---|---|---|---|---|
| Research Admin. | 101 | 1370 | — | 1370 | — |
| Con't. Education | 201 | 700 | — | 700 | — |
| Academic Deans Office | 301-304 | 2720 | — | 2720 | — |
| Media Center | 311 | 1070 | 820 | 250 | — |
| Computer Services | 321 | 8272[5] | 6530 | 1742 | — |
| Library | 331 | 34117 | 33267 | 550 | 300 |
| Student Services | 401-415 | 86714 | 35840[1] | 11750[2] | 33124[3] |
| Executive Management | 501-506 | 3705 | — | 3175 | 530 |
| Institutional Support | 511-526 | 15349 | 505 | 11684 | 3160 |
| Auxiliary Enterprises | 901-904 | 55255 | 4110 | 895 | 50250[4] |
| Physical Plant | 601 | 16218 | — | — | 16218 |
| Foundation at NJIT | 300 | 2540[6] | — | 2540 | — |
| Total | | 228030 | 81072 | 43376 | 103582 |

[1] Physical Ed., Gym, Pool

[2] Includes Alumni Office

[3] Includes Student Center

[4] Includes Dormitory

[5] Not incl. 1510 under constr.

[6] Rented space

March 1, 1980

# FORMULA RESOURCE NEEDS PROJECTION

## FY81 - FY85

| | | FY81 Request | FY82 | FY83 | FY84 | FY85 |
|---|---|---|---|---|---|---|
| (A) | Student FTE | 4,300 | 4,403 | 4,505 | 4,607 | 4,709 |
| (B) | Faculty Positions Generated: | | | | | |
| | Full Time Faculty | 241.04 | 248.72 | 254.16 | 259.59 | 265.00 |
| | Part Time Faculty | 30.03 | 31.00 | 31.68 | 32.35 | 33.04 |
| | Teaching Assistants | 8.39 | 8.65 | 8.84 | 9.03 | 9.22 |
| | Total | 279.46 | 288.37 | 294.68 | 300.97 | 307.26 |
| (C) | Projected Teaching Lines | 248.74 | 257.48 | 263.10 | 268.72 | 274.34 |
| (D) | Add-on Lines | | | | | |
| | Research Allowance (7%) | 17.41 | 18.02 | 18.42 | 18.81 | 19.20 |
| | Academic Administration (5%) | 13.31 | 12.87 | 13.16 | 13.44 | 13.72 |
| | Sub Total Add-Ons | 30.72 | 30.89 | 31.58 | 32.25 | 32.92 |
| | Grand Total Faculty Positions | 279.46 | 288.37 | 294.68 | 300.97 | 307.26 |
| (E) | Formula Funds Generated: | | | | | |
| | IDR | 10,354,585 | 11,156,059 | 12,291,003 | 13,304,453 | 14,571,820 |
| | Academic Development (excluding any base allocation) | 477,481 | 501,355 | 526,423 | 552,744 | 580,381 |
| | General Support | 6,204,720 | 6,639,050 | 7,103,784 | 7,601,049 | 8,133,122 |
| | Physical Plant | 4,204,640 | 4,498,965 | 4,813,893 | 5,150,866 | 5,511,427 |
| | Total Formula | 21,241,426 | 22,795,429 | 24,735,103 | 26,689,112 | 28,796,750 |

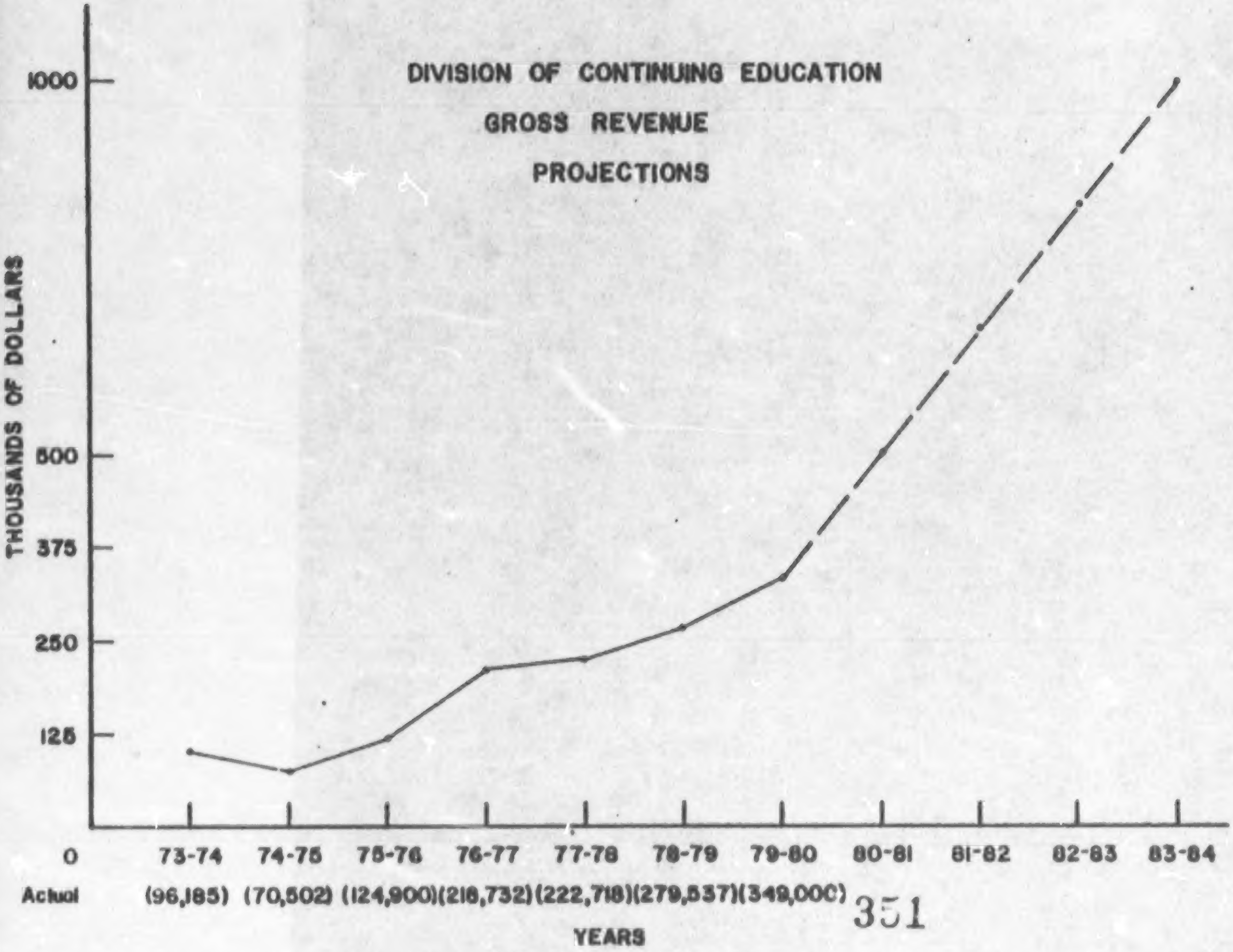
Note: See next page for Calculation Methodology.

# FORMULA RESOURCE NEED PROJECTION

## CALCULATION METHODOLOGY

### PARAMETERS

| | |
|---|---|
| IDR | Used DHE parameters, salaries increased 7% per year |
| Academic Development | Utilizing FY81 request, excluding Base Allocation of $100,000, applied uniform 5% increase |
| General Support | Utilizing FY81 request, applied uniform 7% increase |
| Physical Plant | Utilizing FY81 request, applied uniform 7% increase |


DIVISION OF CONTINUING EDUCATION
GROSS REVENUE
PROJECTIONS
THOUSANDS OF DOLLARS
1000
500
375
250
125
0
73-74
74-75
75-76
76-77
77-78
78-79
79-80
80-81
81-82
82-83
83-84
Actual
(96,185)
(70,502)
(124,900)
(216,732)
(222,718)
(279,537)
(349,000)
YEARS

## PROGRAM SCHEDULE for DEFERRED MAINTENANCE

| ITEM | COST BASED UPON COMPLETION IN FY 79-80 | FY START WORK | FY COMPLETE WORK | NO. YEARS | AMOUNT BUDGETED PER YEAR | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1979-1980 | 1980-1981 | 1981-1982 | 1982-1983 | 1983-1984 |
| **Institute Wide** | | | | | | | | | |
| 504 Barrier Free Compliance | 500,000 | 1980 | 1983 | 3 | 55,000 | 205,000 | 249,000 | | |
| Sprinklers for Buildings | 4 | | | | | | | | |
| Tie Delta 2000 into Existing Buildings(Energy Management) | 80,000 | 1981 | 1984 | 4 | | 20,000 | 20,000 | 20,000 | 20,000 |
| Campus Sidewalk Replacement | 85,000 | 1980 | 1983 | 3 | 40,000 | 20,000 | 25,000 | | |
| Exterior Door Replacement | 40,000 | 1980 | 1981 | 1 | 40,000 | 14,000 | 14,000 | | |
| Recondition Parking Lots | 30,000 | 1981 | 1983 | 3 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Fire Alarms | 60,000 | 1980 | 1982 | 2 | 30,000 | 30,000 | | | |
| **Speche** | | | | | | | | | |
| Create Offices for Public Safety | 15,000 | 1981 | 1981 | 1 | | 15,000 | | | |
| **Entwistle Physical Education** | | | | | | | | | |
| Upgrade Existing Well | 21,000 | 1981 | 1981 | 1 | | 21,000 | | | |
| Recondition Women Athletic Field | 35,000 | 1980 | 1980 | 1 | 35,000 | | | | |
| Automate Chlorine System | 10,000 | 1982 | 1982 | 1 | | | 10,000 | | |
| **Library & Humanities** | | | | | | | | | |
| Resurface Entrance Ramp | 40,000 | 1981 | 1981 | 1 | | 40,000 | | | |
| Replace Roof | 100,000 | 1983 | 1983 | 1 | | | | 100,000 | |
| Replace Cooling Tower | 30,000 | 1982 | 1982 | 1 | | | 30,000 | | |
| Replace Carpeting | 15,000 | 1981 | 1981 | 1 | | 15,000 | | | |
| Install Pumping System to Eliminate Flooding | 25,000 | 1981 | 1981 | 1 | | 25,000 | | | |
| **Center** | | | | | | | | | |
| Replace Roof | 95,000 | 1982 | 1982 | 1 | | | 95,000 | | |
| Replace Control System for Chilled Water Air Cond. | 25,000 | 1981 | 1981 | 1 | | 25,000 | | | |
| **Faculty** | | | | | | | | | |
| Replacement of Boiler Valves & Controls | 76,000 | 1981 | 1981 | 1 | | 76,000 | | | |
| Replace Roof | 66,000 | 1984 | 1984 | 1 | | | | | 66,000 |
| **Eberhardt Hall** | | | | | | | | | |
| Exterior Building Renovations | 700,000 | 1981 | 1982 | 2 | | 400,000 | 300,000 | | |
| Replace Incinerator | 65,000 | 1982 | 1983 | 1 | | | | 65,000 | |
| Sub Totals | 2,153,000 | | | | 230,000 | 916,000 | 733,000 | 195,000 | 96,000 |

9/13/79

- Continued

## DEFERRED MAINTENANCE - Cont'd.

| ITEM | COST BASED UPON COMPLETION IN FY 79-80 | FY START WORK | FY COMPLETE WORK | NO. YEARS | AMOUNT BUDGETED PER YEAR 1979-1980 | 1980-1981 | 1981-1982 | 1982-1983 | 1983-1984 |
|---|---|---|---|---|---|---|---|---|---|
| **Callison** | | | | | | | | | |
| Replace Roof | 42,000 | 1981 | 1981 | 1 | | 42,000 | | | |
| Replace A/C System in [illegible] | 10,000 | 1982 | 1982 | 1 | | | 10,000 | | |
| Convert Boilers to Burn #6 Oil & Gas | 35,000 | 1981 | 1981 | 1 | | 35,000 | | | |
| Water Booster Pump System | 30,000 | 1984 | 1984 | 1 | | | | | 30,000 |
| **Tiernan** | | | | | | | | | |
| Provide Additional Ventilation/Exhaust System | 30,000 | 1980 | 1980 | 1 | 30,000 | | | | |
| Control Air For HVAC System | 8,000 | 1981 | 1981 | 1 | | 8,000 | | | |
| Standby HVAC Pumps | 85,000 | 1982 | 1982 | 1 | | | 85,000 | | |
| Replace Roof | 120,000 | 1983 | 1983 | 1 | | | | 120,000 | |
| HVAC Water Booster Pump System | 35,000 | 1982 | 1982 | 1 | | | 35,000 | | |
| **Colton** | | | | | | | | | |
| Replace Roof | 33,000 | 1981 | 1981 | 1 | | 33,000 | | | |
| Repair Incinerator | 10,000 | 1984 | 1984 | 1 | | | | | 10,000 |
| Replace Steam Valves in Building | 10,000 | 1981 | 1981 | 1 | | 10,000 | | | |
| Convert Boilers to Burn #6 Oil & Gas | 35,000 | 1981 | 1981 | 1 | | 35,000 | | | |
| HVAC Water Booster Pump System | 23,000 | 1981 | 1981 | 1 | | 23,000 | | | |
| **Campbell** | | | | | | | | | |
| Replace Roof | 30,000 | 1982 | 1982 | 1 | | | 30,000 | | |
| Replace Steam Valves in Building | 10,000 | 1981 | 1981 | 1 | | 10,000 | | | |
| HVAC Water Booster Pump System | 22,000 | 1981 | 1981 | 1 | | 22,000 | | | |
| **Weston** | | | | | | | | | |
| Convert Boilers to Burn #6 Oil & Gas | 20,000 | 1981 | 1981 | 1 | | 20,000 | | | |
| Replace Roof | 43,000 | 1982 | 1982 | 1 | | | 43,000 | | |
| HVAC Water Booster Pump System | 30,000 | 1984 | 1984 | 1 | | | | | 30,000 |
| **[illegible] Central** | | | | | | | | | |
| Install New Boiler | 40,000 | 1981 | 1981 | 1 | | 40,000 | | | |
| **Dormitory** | | | | | | | | | |
| SUB TOTALS | 723,000 | | | | 330,000 | 1,318,000 | 872,000 | 313,000 | 166,000 |
| 9/13/79 GRAND TOTALS | 2,464,000 | | | | 348,000* | 409,000* | 404,000° | | |

* without renovation of Eberhardt

° without 504 compliance

# STUDENT FINANCIAL AID PROJECTIONS

## 1978 - 1981

| | 1978-1979 | | 1979-1980 | | 1980-1981 | | 1981-1982 | |
|---|---|---|---|---|---|---|---|---|
| | No. Awards | Amount | No. Awards | Amount | No. Awards | Amount | No. Awards | Amount |
| **STATE SOURCES** | | | | | | | | |
| PTAG | 23 | $ 4,600 | - | - | - | - | - | - |
| TAG | 320 | 228,040 | 550 | $ 357,500 | 625 | $ 406,250 | 750 | $ 525,000 |
| GSS | 73 | 34,350 | 130 | 65,000 | 190 | 85,500 | 240 | 108,000 |
| NJSS | 177 | 117,190 | 120 | 91,840 | 90 | 74,880 | 70 | 58,240 |
| EOF | 160 | 56,170 | 190 | 71,500 | 210 | 75,500 | 250 | 92,500 |
| GUARANTEED STUDENT LOANS | 524 | 890,000 | 600 | 900,000 | 650 | 1,040,000 | 680 | 1,360,000 |
| STUDENT EMPLOYMENT | * | 130,000 | * | 130,000 | * | 130,000 | * | 1,400,000 |
| | 1,277 | $1,496,750 | 1,590 | $1,615,840 | 1,765 | $1,812,130 | 1,990 | $2,283,740 |
| **FEDERAL SOURCES** | | | | | | | | |
| BEOG | 679 | $ 569,869 | 750 | $ 750,000 | 775 | $1,085,000 | 800 | $1,280,000 |
| SEOG | 154 | 64,413 | 175 | 87,500 | 175 | 87,500 | 175 | 87,500 |
| NDSL | 58 | 33,470 | 75 | 60,000 | 100 | 80,000 | 125 | 100,000 |
| CWS | *270 | 101,843 | *290 | 110,000 | *300 | 115,000 | *310 | 120,000 |
| | 1,161 | $ 769,595 | 1,290 | $1,007,500 | 1,350 | $1,367,500 | 1,410 | $1,587,500 |
| **NJIT SOURCES** | | | | | | | | |
| DOT | 5 | $ 1,250 | 12 | $ 3,000 | 12 | $ 3,000 | 15 | $ 3,750 |
| CHEMICAL ENGR. DEPT. | 116 | 34,750 | 120 | 60,000 | 120 | 60,000 | 130 | 85,000 |
| ALUMNI ASSOC. | 30 | 15,000 | 30 | 15,000 | 35 | 25,000 | 35 | 25,000 |
| FINANCIAL AID OFFICE | 80 | 48,680 | 110 | 77,000 | 110 | 80,000 | 110 | 80,000 |
| NJIT LOAN | 7 | 3,600 | 15 | 11,250 | 20 | 14,500 | 20 | 14,500 |
| F-1 TUITION REMISSION | 15 | 5,700 | 15 | 5,700 | 15 | 5,700 | 15 | 5,700 |
| NATIONAL FUND | 18 | 12,533 | 20 | 14,000 | 20 | 14,000 | 20 | 14,000 |
| UNION CARBIDE | 2 | 2,000 | 2 | 2,000 | 2 | 2,000 | 2 | 2,000 |
| KILLAM MINORITY | - | - | 4 | 4,812 | 4 | 5,800 | 4 | 5,800 |
| FOSTER WHEELER MINORITY | - | - | 1 | 1,750 | 4 | 5,800 | 4 | 5,800 |
| | 273 | $ 123,513 | 329 | $ 194,512 | 342 | $ 215,800 | 355 | $ 241,550 |
| **OTHER** | | | | | | | | |
| MISC. | 100 | $ 60,000 | 100 | $ 60,000 | 100 | $ 65,000 | 100 | $ 65,000 |
| TOTAL | 2,811 | $2,326,981 | 3,309 | $2,877,852 | 3,557 | $3,460,430 | 3,855 | $4,177,790 |

*Student Employment awardees aggregated under Federal CWS